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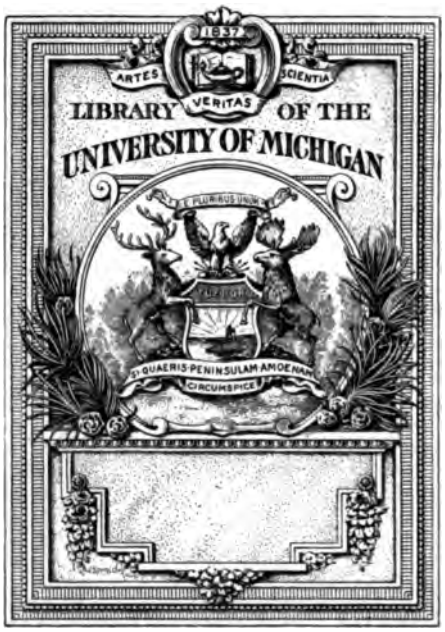


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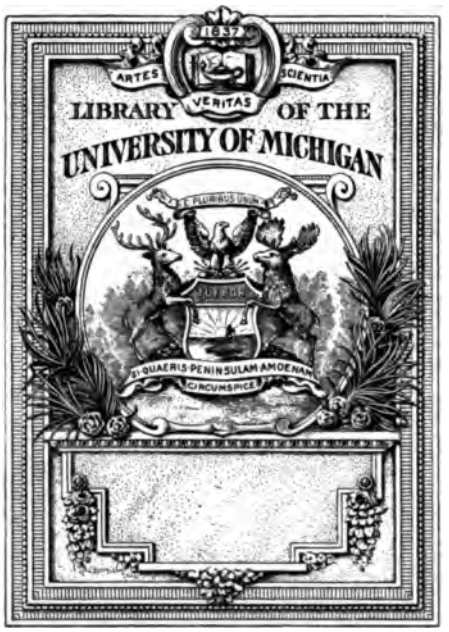


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Dwight Bush Coe.

60th Cong 2nd Sess H. Doc V.11. 5421

# WAR DEPARTMENT

## Annual Reports, 1908

(IN NINE VOLUMES)

## Volume II

*Reports of*

QUARTERMASTER-GENERAL
COMMISSARY-GENERAL
SURGEON-GENERAL
PAYMASTER-GENERAL
CHIEF SIGNAL OFFICER
CHIEF OF COAST ARTILLERY
BOARD OF ORDNANCE AND FORTIFICATION

WASHINGTON
GOVERNMENT PRINTING OFFICE
1908

# ARRANGEMENT OF THE ANNUAL REPORTS OF THE WAR DEPARTMENT FOR THE YEAR ENDED JUNE 30, 1908.

**Volume I**.....Secretary of War.
Chief of Staff.
The Adjutant-General.
Inspector-General.
Judge-Advocate-General.

**Volume II**.....**Armament, Transportation, and Supply:**
Quartermaster-General.
Commissary-General.
Surgeon-General.
Paymaster-General.
Chief of Engineers, Military Affairs.[a]
Chief of Ordnance.[b]
Chief Signal Officer.
Chief of Coast Artillery.
Board of Ordnance and Fortification.

**Volume III**.....**Division and Department Commanders:**
1. Department of the East.
2. Department of the Gulf.
3. Department of the Lakes.
4. Department of the Missouri.
5. Department of Dakota.
6. Department of Texas.
7. Department of the Colorado.
8. Department of California.
9. Department of the Columbia.
10. Philippines Division.
11. Department of Luzon.
12. Department of the Visayas.
13. Department of Mindanao.
14. Army of Cuban Pacification.

**Volume IV**.....**Military Schools and Military Parks:**
Military Academy—
1. Superintendent.
Army Service Schools—
1. Commandant.
2. Assistant Commandant.
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4. Librarian.
5. Of the Line.
6. Staff College.
7. Signal.
Mounted Service School.
Coast Artillery School.
Engineer School.
Submarine Defense School.
Army Medical School.
Military Parks—
1. Chickamauga and Chattanooga.
2. Gettysburg.
3. Shiloh.
4. Vicksburg.

**Volume V**.....Chief of Engineers.

**Volume VI**.....Chief of Ordnance.

**Volumes VII–IX**....Insular Affairs, and Philippine Commission.

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[a] Printed in Report of Chief of Engineers, Vol. V.
[b] Printed in Report of Chief of Ordnance, Vol. VI.

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# REPORT OF THE QUARTERMASTER-GENERAL.

# REPORT OF THE QUARTERMASTER-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE QUARTERMASTER-GENERAL,
*Washington, October 15, 1908.*

SIR: I have the honor to submit the annual report of the operations of the Quartermaster's Department for the fiscal year ended June 30, 1908.

## FINANCIAL STATEMENT.

| | | |
|---|---|---|
| By acts of Congress and allotment there was credited to the regular service of the Quartermaster's Department for the fiscal year ending June 30, 1908, the sum of | $35,816,277.81 | |
| During the fiscal year there was deposited to the credit of appropriations from various services as shown the sum of | 1,947,741.17 | |
| Making total of | | $37,764,018.98 |
| Of this there was remitted to disbursing officers | 31,670,939.22 | |
| There was paid on account of settlements made at the Treasury, etc | 600,085.39 | |
| | | 32,271,024.61 |
| Leaving a balance on July 1, 1908, available for payment of outstanding obligations | | 5,492,994.37 |
| On July 1, 1907, there was on hand from the regular appropriations for service of the Quartermaster's Department, pertaining to the fiscal year 1907 | 5,154,000.95 | |
| From appropriations of other years including all indefinite appropriations | 5,108,340.25 | |
| For special purposes there was appropriated and allotted during the fiscal year ending June 30, 1908, the sum of | 3,837,336.16 | |
| During the fiscal year there was deposited to all appropriations (other than those of 1908 shown above) from various sources the sum of | 2,061,060.46 | |
| | | 16,160,737.82 |
| Of this there was remitted to disbursing officers | 7,705,640.58 | |
| Paid out on account of treasury settlement, etc | 1,404,639.36 | |
| Carried to the surplus fund | 1,444,019.15 | |
| | | 10,554,299.09 |
| Leaving a balance on hand July 1, 1908, of | | 5,606,438.73 |

## RECAPITULATION.

| | | |
|---|---|---|
| Remitted to disbursing officers and paid out on treasury settlements, etc., from appropriations fiscal year ending June 30, 1908 | 32,271,024.61 | |
| And from appropriations of other fiscal years and for special or indefinite appropriations | 10,554,299.09 | |
| | | 42,825,323.70 |

| | | |
|---|---|---|
| Balance remaining in the Treasury July 1, 1908, of appropriations for the regular service of the Quartermaster's Department for fiscal year ending June 30, 1908 | $5,492,994.37 | |
| And of appropriations of other fiscal years and of special or indefinite appropriations | 5,606,438.73 | |
| | | $11,099,433.10 |
| Grand total for fiscal year ending June 30, 1908 | | 53,924,756.80 |

## SUFFICIENCY OF APPROPRIATIONS.

Every effort was made at the beginning of the fiscal year to so apportion and allot the appropriations of the department as to avoid deficiencies, except for extra expense of operations in Cuba. Early in the fiscal year, however, it was realized that this was impossible with the appropriations "Regular supplies" and "Clothing and equipage." In case of the former appropriation, failure to secure in full a much needed deficiency estimate for the fiscal year 1907, and the appropriation for the fiscal year 1908 of a sum inadequate to meet demands arising out of the increase of the artillery, together with the extra expense of Cuban operations, threatened a deficiency of $1,365,388.05, for which amount an estimate was submitted with a comprehensive and clear statement of needs therefor under this appropriation, and the deficiency estimate was passed by Congress in full. For the appropriation "Clothing and equipage" $716,163.21 was estimated for and needed to properly clothe and equip the army, meet calls from the militia, extra expenses of Cuban operations, etc. Of this deficiency estimate $416,163.21 was appropriated, and while the reduction rendered it extremely difficult to meet all needs of the army, and impossible to respond fully and promptly to militia calls, it has been managed so as to get through the fiscal year without further deficiency.

A deficiency of $204,240.79 was estimated for under the appropriation "Incidental expenses," to meet the extra cost of Cuban operations and increased cost of the recruiting service due to the extraordinary efforts it had become necessary to put forth to keep the army recruited. Of this $200,000 was appropriated and has been made to suffice.

The other deficiency estimates were on account of extra cost of Cuban operations, reappropriations to meet unpaid obligations from unexpended balances, which under the law would be turned in to the Treasury surplus fund, but against which remained outstanding obligations, or special cases.

It is gratifying to be in position to omit from this report a repetition of past arguments for increased appropriations. The appropriations for the fiscal year 1909, while not in any sense extravagant, are sufficient to enable the department to carry on its work and meet the needs of the army to which it ministers, in a businesslike and economical manner. Of course there are directions in which more money could be advantageously used, as in construction of buildings, extensions and betterment of utilities, etc., but so far as actual needs are concerned the provision is sufficient, barring emergencies.

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ear ending June 30, 190

| Treasury settl | |
| --- | --- |
| Militia. | Canal |
| ..... | ..... |
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nued.

ending June 30, 1908.

| Treasury settlements | | |
|---|---|---|
| Militia. | Canal. | M |
| $142.60 | $638.80 | $5 |
| | | 6 |
| | | 3 |
| 76.59 | 76.06 | 7 |
| 8,144.20 | | 2 |
| | | 1 |
| 8,363.39 | 714.86 | 246, |
| 2,051.81 | 357.03 | 13, |
| 631.36 | | 2, |
| 11,022.41 | 60.27 | 91, |
| 56,719.35 | 23.65 | 100, |
| | | 2, |

tinued.

r ending June 30, 1908.

| Treasury settlement[illegible] | | |
|---|---|---|
| Militia. | Canal. | M[illegible] |
| [illegible]580, 424.93 | $440.95 | 21[illegible] |
| | | 3[illegible] |
| | | 3[illegible] |

## ANALYSIS OF THE ARMY APPROPRIATION ACT.

To the end that it might be determined what was the intent of Congress in this act, it was carefully analyzed and separated into items under each of the appropriations of the Quartermaster's Department. These were numbered serially for convenience of reference. It was then determined under what item as thus analyzed purchases of each class of supplies, employment of services, or expenditure for other purpose should come. Based upon expenditures for the preceding fiscal year and all other data available, estimates were prepared showing the anticipated cost of each class of supplies, services, or other purpose. The total of these showed the sum needed for each item of the analysis, and the total of items under each appropriation showed the sum needed for the appropriation.

## BUSINESS METHODS.

During the fiscal year important changes in the business methods of the department were worked out, to go into effect with the beginning of the fiscal year 1909, on July 1, 1908.

These changes are authorized by General Orders, Nos. 18 and 73, War Department, 1908, republished as appendices to Circulars No. 1 and No. 11, Quartermaster-General's Office, 1908. The reasons for them are shown in the appended letters to the Secretary of War explaining the desire of this office to decentralize the work of the department.

The system is based upon the principle that Congress has placed to the credit of this department in the United States Treasury, as a commercial concern would to an agent in a bank, certain sums of money for certain purposes. These purposes are shown in the analysis of the army appropriation act placing the funds to the credit of the department, modified to some extent by other statutes.

As the agent of Congress, under direction of the Secretary of War, it is then the duty of the department to expend the funds placed to its credit in accordance with law and regulations.

To this end there is in turn apportioned each chief quartermaster, or quartermaster in charge of an independent station, public work, or other project, a sum sufficient for the ordinary administrative needs of his territorial department, work, etc. The chief quartermasters in turn allot to the posts in their territorial departments credits to meet their needs. The sums so apportioned and allotted are to the territorial departments, posts, and stations what the appropriations made by Congress are to the Quartermaster's Department and must suffice for the purposes for which apportioned and allotted as the appropriations made by Congress must suffice for the needs of the department, unless some unforeseen condition must be met.

The general supply depots of the department are considered in the light of wholesale houses from which supplies may be ordered within a limit of cost established by the apportionments and allotments, or, where to the advantage of the Government, purchases may be made at department headquarters or in the vicinity of posts.

The whole matter of procuring quartermaster supplies of that class for which apportionments can be made becomes then as simple as is believed possible. A post quartermaster orders through his chief quartermaster from a depot supplies not to exceed the credit he has for his post. The depot fills the order, sends an invoice showing cost, and receives a draft on the Quartermaster-General (credit transfer) for the value. When the depot quartermaster needs to replenish his stock the Quartermaster-General cashes the drafts by placing the money to his credit. The whole matter is placed upon a money-value basis and operated in accordance with the principle of agency and banking methods.

Services and some supplies can not, of course, be ordered from depots and many supplies can be purchased locally to advantage. To pay for these a sufficient capital is placed to the credit of quartermasters requiring it.

## APPROPRIATIONS FOR CONSTRUCTION.

The following table shows the amounts appropriated and available for construction and repair of buildings and incidental purposes during the fiscal year, the amounts allotted therefrom and purposes for which allotted, and the unallotted balance at the close of the fiscal year. There is also shown the amounts allotted from the general appropriations for use in connection with construction and repair of buildings, etc., and the purposes for which allotted.

| Appropriation. | Available July 1, 1908. | Allotted or expended fiscal year 1908. | | | | | | Unallotted balance June 30, 1908. |
|---|---|---|---|---|---|---|---|---|
| | | New construction. | Repairs, alterations, and additions. | Rents. | Employees, services, etc. | Supplies, equipment, etc. | Total. | |
| Barracks and quarters | $3,750,000.00 | $1,962,972.11 | $688,870.20 | $496,435.24 | $118,821.75 | $457,961.84 | $3,725,061.14 | $24,938.86 |
| Military post exchange | 397,500.00 | [a] 300,361.00 | [b] 32,680.61 | | | 48,443.23 | 381,484.84 | 16,015.16 |
| Construction and repair hospitals | 475,000.00 | [c] 242,417.00 | [d] 170,479.44 | | | | 412,896.44 | 62,103.56 |
| Quarters for hospital stewards | 40,000.00 | 33,618.00 | 6,263.15 | | | | 39,881.15 | 118.85 |
| Shooting galleries and ranges | 125,000.00 | 1,943.00 | 122,083.47 | | | | 124,026.47 | 973.53 |
| Military post, Manila, P. I. | 9,941.85 | | [e] 9,941.85 | | | | 9,941.85 | |
| Military posts | 992,437.23 | 833,371.00 | 45,465.70 | | 2,500.75 | | 881,337.45 | [f] 111,099.78 |
| Barracks and quarters, S. C. D. | 1,250,000.00 | 922,201.00 | 3,118.00 | | 6,846.62 | | 932,165.62 | [f] 317,834.38 |
| Military post: | | | | | | | | |
| Fort Crook, Nebr. | [g] 100,000.00 | | [g] 75,000.00 | | | | 75,000.00 | [f] 25,000.00 |
| Fort Niagara, N. Y. | 978.62 | | 707.00 | | | | 707.00 | [f] 271.62 |
| Fort Snelling, Minn. | 25,546.80 | | | | | | | [f] 25,546.80 |
| Army general hospital: | | | | | | | | |
| Washington, D. C. | 1,495.37 | 825.00 | 67.67 | | | | 892.67 | [f] 602.70 |
| San Francisco, Cal. | 30,000.00 | | 27,335.00 | | | | 27,335.00 | [f] 2,065.00 |
| Army supply depot, Fort Mason, Cal. | 750,000.00 | | | | 14,428.61 | | 14,428.61 | [f] 735,571.39 |
| Military prison, San Francisco, Cal. | 50,000.00 | 10,000.00 | | | | [h] 6,449.51 | 16,449.51 | [f] 33,550.49 |
| Army transportation | [i] 330,279.12 | [j] 297,026.00 | | | 33,253.12 | | 330,279.12 | |
| Regular supplies | [i] 472,673.89 | [k] 453,527.00 | [l] 5,646.89 | | 13,500.00 | | 472,673.89 | |
| Total | 8,900,852.88 | 5,058,261.11 | 1,187,659.98 | 496,435.24 | 189,350.85 | 512,854.58 | 7,444,560.76 | 1,356,292.12 |
| Barracks and quarters, Philippine Islands | 479,563.57 | 122,725.50 | 57,593.51 | | [m] 7,000.00 | 142,095.91 | 329,414.92 | [n] [f] 150,148.65 |
| Grand total | 9,280,416.45 | 5,180,986.61 | 1,245,252.49 | 496,435.24 | 196,350.85 | 654,950.49 | 7,773,975.68 | 1,506,440.77 |

[a] Includes enlargement of buildings and installation of plumbing, heating, and lighting.
[b] Includes maintenance.
[c] Includes plumbing and electric wiring where required; includes $60,000 reappropriated for hospital at San Juan, P. R., act of May 30, 1908.
[d] Includes entire sum apportioned to the Philippine Islands.
[e] Remitted to the chief quartermaster, Philippines Division.
[f] These balances are available in the fiscal year 1909, the appropriations being indefinite as to fiscal years. The other balances are available only for extra work under contracts.
[g] For repairs and construction necessary on account of damages by tornado on May 12, 1908; act of May 27, 1908.
[h] Tools, machinery, material, etc., for use in construction of military prison at Alcatraz Island.
[i] Allotted from the general appropriation.
[j] Includes $8,018 for construction of railway station, and tank and trestle.
[k] Includes $54,411 for construction of bakeries.
[l] Repairs to bakeries.
[m] Purchases of land.
[n] Cash payments only are reported from the Philippines, so that this balance will be reduced by outstanding liabilities for construction and repair work under contract not completed and paid for on or before June 30, 1908.

ALLOTMENTS FROM GENERAL APPROPRIATIONS.

In addition to the above amounts, funds were allotted during the fiscal year, from the general appropriations of the Quartermaster's Department in connection with the construction of buildings, installation, and repair of heating apparatus and lighting fixtures, construction, and repair of water and sewer systems, roads, walks, wharves, etc., in the United States, as follows:

APPROPRIATION "TRANSPORTATION OF THE ARMY."

| Purpose. | New construction. | Repairs and alterations. | Supplies, services, etc. | Total. |
|---|---|---|---|---|
| Water systems | $549,568.45 | $146,643.42 | [a] $210,000.00 | $906,211.87 |
| Sewer systems | 53,725.25 | 130,905.88 | | 184,631.13 |
| Garbage crematories | 27,129.00 | | | 27,129.00 |
| Fire extinguishing apparatus and supplies | | | 30,188.60 | 30,188.60 |
| Roads | 525,152.40 | 64,894.62 | | 590,047.02 |
| Walks | 191,538.77 | 12,799.79 | | 204,338.56 |
| Railroads | 90,376.26 | 22,316.26 | | 112,692.52 |
| Wharves | 209,218.35 | 74,452.24 | | 283,670.59 |
| Drainage, grading, and sea walls | 327,856.97 | | | 327,856.97 |
| Total | 1,974,565.45 | 452,012.21 | 240,188.60 | 2,666,766.26 |

APPROPRIATION "REGULAR SUPPLIES."

| | | | | |
|---|---|---|---|---|
| Lighting systems | $176,401.89 | $64,487.98 | | $240,889.87 |
| Heating systems | [b] 14,572.00 | | | 14,572.00 |
| Ice plants | 19,490.00 | 3,892.38 | | 23,382.38 |
| Saw mills | | | [c] $10,266.14 | 10,266.14 |
| Boundary fences including repairs | 18,950.27 | | | 18,950.27 |
| Total | 229,414.16 | 68,380.36 | 10,266.14 | 308,060.66 |

APPROPRIATION "INCIDENTAL EXPENSES."

| | | | | |
|---|---|---|---|---|
| Construction and repair work | | | [d] $21,377.65 | $21,377.65 |
| Care, preservation, and adornment posts and reservations | | | 12,783.35 | 12,783.35 |
| Total | | | 34,161.00 | 34,161.00 |

[a] Authorized for purchase of water at posts.
[b] Improvements and includes repairs.
[c] Supplies and new machinery.
[d] Purchase, erection, and repair of flagstaffs, purchase of drawing supplies, purchase and repair of surveying instruments, etc.

*Philippine Islands.*—Cash expenditures from general appropriations in connection with construction and repair work, are reported as follows:

| | | |
|---|---|---|
| Appropriation "Transportation of the army:" | | |
| For roads, walks, bridges, wharves, grading, etc | $44,821.84 | |
| For plumbing, water and sewer systems | 21,453.91 | |
| | | $66,275.75 |
| Appropriation "Regular supplies:" | | |
| For fences, bakeries, etc | 1,981.17 | |
| For structural lighting work | 186.77 | |
| | | 2,167.94 |
| Appropriation "Incidental expenses:" For trees, grass seeds, flagstaffs, etc | | 1,324.18 |
| Total | | 69,767.87 |

Reports do not show contract obligations against funds of the fiscal year for the above purposes which will become due and payable after June 30, 1908.

*Résumé.*—The aggregate of authorizations in the United States and of cash expenditures in the Philippine Islands for construction and repair of buildings, water, sewer, and lighting systems, maintenance thereof, care of grounds, rents, etc., from appropriations for construction and allotments from general appropriations is $10,852,731.47.

*Electric lighting.*—Seventy-nine posts in the United States are lighted by electricity, 5 new systems having been added during the year. There is great pressure for installation of new and extension of existing electric-lighting systems and strong representations are constantly being made to this end. The department is doing what it can to meet this demand from available appropriations. Seven posts are wholly or partly lighted by gas, and 2 by acetylene gas, and 64 posts and stations in the United States, Porto Rico, and Alaska are lighted by mineral-oil lamps.

*Change in appropriations.*—The cost of plumbing, construction, and repair of water and sewer systems and garbage crematories, and purchase of fire-extinguishing apparatus, beginning with July 1, 1908, is chargeable to the new appropriation "Water and sewers at military posts;" and the construction and repair of roads, walks, and wharves, and drainage, grading, sea walls, etc., to the new appropriation for "Roads, walks, wharves, and drainage."

*Statement showing buildings constructed or in course of construction in the United States from funds of the fiscal year ended June 30, 1908.*

| Posts and buildings. | Division of cost. | | | | | Total cost for each building. | Total for each post. | Date of completion. |
|---|---|---|---|---|---|---|---|---|
| | Building. | | Fixtures. | | | | | |
| | Appropriation. | Cost. | A. T. plumbing. | R. S. Heating. | R. S. Lighting. | | | |
| Adams, R. I.: | | | | | | | | |
| Barrack for 1 company Coast Artillery | B. & Q., S. C. D. | $42,883.00 | $3,890.00 | $3,200.00 | $439.00 | $50,412.00 | $76,745.00 | Dec. 1, 1908. |
| Band barrack | do | 21,842.00 | 1,750.00 | 2,100.00 | 641.00 | 26,333.00 | | |
| Alaska. (*See* end of statement.) | | | | | | | | |
| Alcatraz Island, Cal.: | | | | | | | | |
| Completion of 4 company barracks | B. & Q. | 2,740.00 | | | | 2,740.00 | | |
| Commencing work on military prison | Special | 10,000.00 | | | | 10,000.00 | 15,430.00 | Feb. 25, 1908. |
| Remodeling barracks into officers' quarters | B. & Q. | 1,640.00 | 1,050.00 | | | 2,690.00 | | |
| Andrews, Mass.: | | | | | | | | |
| Barrack for 1 company Coast Artillery | B. & Q., S. C. D. | 30,415.00 | 3,784.00 | 3,165.00 | 732.00 | 38,096.00 | 68,362.00 | Nov. 15, 1908. |
| Addition to post hospital | C. & R. H. | 15,968.00 | [a] 1,523.00 | 2,267.00 | [a] 315.00 | 20,073.00 | | Oct. 10, 1908. |
| Bakery | R. S. | 8,820.00 | 799.00 | 379.00 | 195.00 | 10,193.00 | | Oct. 16, 1908. |
| Apache, Ariz.: Wagon shed | B. & Q. | [b] 200.00 | | | | 200.00 | 200.00 | |
| Baker, Cal.: Quartermaster's storehouse | do | 5,700.00 | | | | 5,700.00 | 5,700.00 | Aug. 29, 1908. |
| Bayard, N. Mex.: | | | | | | | | |
| 1 double set Hospital Corps sergeants' quarters | H. S. Q. | 5,437.00 | [a] 600.00 | | [a] 150.00 | 6,187.00 | 51,692.00 | Oct. 7, 1907. |
| Hay shed for dairy | B. & Q. | [b] 850.00 | | | | 850.00 | | Nov. 30, 1907. |
| Powder house | do | [b] 200.00 | | | | 200.00 | | Dec. 31, 1907. |
| Coal shed and trestle | do | 5,650.00 | | | | 5,650.00 | | Apr. 30, 1908. |
| Administration Building | do | 17,985.00 | 1,000.00 | 2,740.00 | 720.00 | 22,445.00 | | Feb. 28, 1909. |
| 2 double noncommissioned staff officers' quarters | do | 13,174.00 | 1,800.00 | 814.00 | 572.00 | 16,360.00 | | Do. |
| Barrancas, Fla.: | | | | | | | | |
| Coal shed | do | 6,475.00 | | | | 6,475.00 | 12,528.00 | Sept. 29, 1908. |
| Bowling alley building | M. P. E. | 4,825.00 | | | [a] 130.00 | 4,955.00 | | Do. |
| Railway station | A. T. | 1,098.00 | | | | 1,098.00 | | Aug. 6, 1908. |
| Bliss, Tex.: Blacksmith and wheelwright shop | B. & Q. | 3,633.00 | | | | 3,633.00 | 3,633.00 | Sept. 25, 1908. |
| Boise Barracks, Idaho: Post exchange and gymnasium | M. P. E. | 20,244.00 | [a] 2,020.00 | [a] 1,933.00 | [a] 569.00 | 24,766.00 | 24,766.00 | Apr. 30, 1909. |
| Casey, Wash.: Gymnasium and bowling alley | do | 7,750.00 | [a] 1,915.00 | [a] 1,435.00 | [a] 525.00 | 11,625.00 | 11,625.00 | |
| Caswell, N. C.: | | | | | | | | |
| Barrack for First Company Coast Artillery | B. & Q., S. C. D. | 22,862.00 | 189.00 | 4,203.00 | 400.00 | 27,654.00 | 47,310.00 | Feb. 9, 1909. |
| Lavatory for barrack | do | 4,082.00 | 2,802.00 | 1,151.00 | 108.00 | 8,143.00 | | Do. |
| Mess hall and kitchen for barrack | do | 5,143.00 | 533.00 | | 117.00 | 5,793.00 | | Completed. |
| Post exchange | M. P. E. | 4,820.00 | [a] 625.00 | | [a] 275.00 | 5,720.00 | | Nov. 5, 1908. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Columbus Barracks, Ohio:** | | | | | | | | |
| 3 double sets lieutenants' quarters | B. & Q. | 49,190.00 | 3,500.00 | 3,900.00 | 3,164.00 | 59,754.00 | 79,878.00 | Oct. 28, 1908. |
| Quartermasters' storehouse | do | 12,101.00 | | | | 12,101.00 | | May 29, 1908. |
| Wagon shed | do | 2,295.00 | | | | 2,295.00 | | Apr. 24, 1908. |
| Bakery | R. S. | 5,100.00 | | 363.00 | 265.00 | 5,728.00 | | Nov. 2, 1908. |
| Crook, Nebr.: Wagon shed | B. & Q. | 2,760.00 | | | | 2,760.00 | 2,760.00 | Feb. 13, 1908. |
| Dade, Fla.: | | | | | | | | |
| Addition to civilian employees' quarters | do | 1,950.00 | 325.00 | | | 2,275.00 | 45,672.00 | Mar. 4, 1908. |
| Gymnasium and bowling alley | M. P. E. | 10,587.00 | [a] 1,125.00 | | [a] 500.00 | 12,212.00 | | Jan. 29, 1909. |
| Additions to 2 barracks for 109 men each (total capacity). | B. & Q., S. C. D. | 13,049.00 | | | 1,220.00 | 14,269.00 | | Dec. 28, 1908. |
| Lavatory | do | 2,373.00 | 3,487.00 | | 138.00 | 5,998.00 | | Jan. 29, 1909. |
| Mess hall | do | 5,973.00 | 290.00 | | 235.00 | 6,498.00 | | Do. |
| Coal shed and trestle | A. T. | 4,420.00 | | | | 4,420.00 | | July 31, 1908. |
| D. A. Russell, Wyo.: | | | | | | | | |
| 1 field officers' quarters | B. & Q. | 14,200.00 | 795.00 | 987.00 | 770.00 | 16,752.00 | 772,841.00 | Feb. 15, 1909. |
| 3 double stable guard, saddler and farrier shops | do | 15,708.00 | | | 803.00 | 16,511.00 | | Nov. 15, 1908. |
| 2 sets colonel's quarters | do | 35,980.00 | 3,071.00 | 2,464.00 | 1,730.00 | 43,245.00 | | Aug. 15, 1909. |
| 3 double captains' quarters | do | 74,400.00 | 4,443.00 | 4,695.00 | 3,073.00 | 86,611.00 | | Do. |
| 4 double lieutenants' quarters | do | 79,056.00 | 6,088.00 | 5,716.00 | 3,328.00 | 94,188.00 | | Sept. 15, 1909. |
| 4 double noncommissioned officers' quarters | do | 25,836.00 | 3,065.00 | | 1,542.00 | 30,443.00 | | Do. |
| 2 band barracks | do | 33,246.00 | 3,740.00 | 2,982.00 | 1,018.00 | 40,986.00 | | Do. |
| 3 double field artillery barracks (240 men each) | M. P. | 231,900.00 | 22,034.00 | 20,784.00 | 6,352.00 | 281,070.00 | | Aug. 15, 1909. |
| 6 artillery stables for 138 horses each | B. & Q. | 117,480.00 | 4,128.00 | | 1,590.00 | 123,198.00 | | Do. |
| 1 field, staff, and band stable | do | 12,350.00 | 462.00 | | 326.00 | 13,138.00 | | Sept. 15, 1909. |
| 2 artillery gun sheds | do | 26,590.00 | 109.00 | | | 26,699.00 | | Do. |
| Davis, Alaska: Enlarging guardhouse | do | [b] 581.00 | | | | 581.00 | 581.00 | |
| Des Moines, Iowa: | | | | | | | | |
| 1 double captains' quarters | do | 18,897.00 | 1,568.00 | 1,650.00 | 1,157.00 | 23,272.00 | 84,151.00 | Nov. 14, 1908. |
| 2 double lieutenants' quarters | do | 36,075.00 | 3,136.00 | 3,176.00 | 1,900.00 | 44,287.00 | | Do. |
| Quartermasters' storehouse | do | 13,710 00 | | | | 13,710.00 | | Do. |
| Wagon shed | do | 2,882.00 | | | | 2,882.00 | | Sept. 30, 1908. |
| Douglas, Utah: | | | | | | | | |
| Bakery | R. S. | 12,600.00 | 970.00 | 705.00 | 302.00 | 14,577.00 | 62,294.00 | Completed. |
| Hospital | C & R., H. | 38,525.00 | [a] 4,150.00 | 4,340.00 | [a] 702.00 | 47,717.00 | | Nov. 30, 1908. |
| Egbert, Alaska: | | | | | | | | |
| Gymnasium building and equipment | M. P. E. | [b] 10,279.00 | | | | 10,279.00 | 10,414.00 | |
| Straw shed | B. & Q. | [b] 135.00 | | | | 135.00 | | |
| Ethan Allen, Vt.: 1 double set civil employees' quarters | do | 5,740.00 | 750.00 | | 300.00 | 6,790.00 | 6,790.00 | May 6, 1908. |
| Flager, Wash.: | | | | | | | | |
| Basement under quartermaster's storehouse | do | 3,497.00 | | | | 3,497.00 | | |
| Lavatory | do | 950.00 | 553.00 | | | [b] 1,503.00 | | |
| Bowling alley building | M. P. E. | 3,843.00 | | | | 3,843.00 | | Oct. 23, 1908. |
| Coal shed | B. & Q. | 1,956.00 | | | | 1,956.00 | 10,799.00 | Expired Oct. 21, 1908. |
| Gibbon, Alaska: | | | | | | | | |
| Labor for constructing barracks | do | 4,838.00 | | | | [b] 4,838.00 | 4,838.00 | |
| Individual dog houses | do | 150.00 | | | | [b] 150.00 | 150.00 | |
| Geo. Wright, Wash.: | | | | | | | | |
| Addition to guardhouse | do | 9,277.00 | 2,663.00 | 1,581.00 | 358.00 | 13,879.00 | 23,164.00 | Completed. |
| Extension quartermaster's stable for 44 additional animals. | do | 8,691.00 | 459.00 | | 135.00 | 9,285.00 | | Sept. 8, 1908. |

[a] Chargeable to same appropriation as the construction proper.

[b] Work done by purchase of material and hire of labor.

*Statement showing buildings constructed or in course of construction in the United States from funds of the fiscal year ended June 30, 1908*—Continued.

| Posts and buildings. | Division of cost. | | | | | Total cost for each building. | Total for each post. | Date of completion. |
|---|---|---|---|---|---|---|---|---|
| | Building. | | Fixtures. | | | | | |
| | Appropriation. | Cost. | A. T. Plumbing. | R. S. Heating. | R. S. Lighting. | | | |
| Greble, R. I.: | | | | | | | | |
| Coal bin at power plant | B. & Q. | $1,894.00 | | | $21.00 | $1,915.00 | | Nov. 30, 1907. |
| Custodian's cottage | do | 2,895.00 | $425.00 | | | 3,320.00 | $5,235.00 | June 23, 1908. |
| Hamilton, N. Y.: 1 quartermaster's shop building | B. & Q., S. S. D. | 4,430.00 | | | | 4,430.00 | 4,430.00 | Oct. 15, 1908. |
| Hancock, N. J.: | | | | | | | | |
| Temporary stable for 18 animals | B. & Q. | 490.00 | | | | [a] 490.00 | | |
| 1 double C. A. barrack for 218 men | B. & Q., S. C. D. | 68,400.00 | 7,294.00 | $5,596.00 | 1,938.00 | 83,228.00 | | Expires Jan. 29, 1909. |
| Gymnasium and bowling alley | M. P. E. | 16,825.00 | [b] 1,672.00 | [b] 1,275.00 | [b] 942.00 | 20,714.00 | 104,432.00 | Expired Nov. 8, 1908. |
| H. G. Wright, N. Y.: | | | | | | | | |
| Wood house | B. & Q. | 690.00 | | | | [a] 690.00 | | |
| 1 doubleset noncommissioned staff officers' quarters | B. & Q., S. C. D. | 7,655.00 | 812.00 | | 250.00 | 8,717.00 | 9,407.00 | Nov. 15, 1908. |
| Howard, Md.: Coal shed | B. & Q. | 842.00 | | | | 842.00 | 842.00 | June 13, 1908. |
| Hot Springs, Ark.: Stable and carriage shed | do | 5,294.00 | 490.00 | | | 5,784.00 | 5,784.00 | Feb. 29, 1908. |
| Huachuca, Ariz.: | | | | | | | | |
| Ambulance shed | do | 125.00 | | | | [a] 125.00 | | |
| Extension to band stable | do | 1,843.00 | | | | [a] 1,843.00 | | |
| Swimming pool | M. P. E. | 7,266.00 | | | | 7,266.00 | | June 30, 1908. |
| Bowling alley building and alleys | do | 6,950.00 | | | [b] 150.00 | 7,100.00 | 16,334.00 | Oct. 26, 1908 |
| Jamestown Exposition: Completion of temporary bakery. | R. S. | 426.00 | | | | 426.00 | 426.00 | Completed. |
| Jay, N. Y.: | | | | | | | | |
| Temporary post exchange and gymnasium | M. P. E. | 12,740.00 | [b] 1,896.00 | [b] 1,249.00 | [b] 715.00 | 16,600.00 | | Mar. 31, 1908. |
| Addition to building No. 12 | B. & Q. | 492.00 | | | 8 | [a] 500.00 | 17,100.00 | |
| Jefferson Barracks, Mo.: | | | | | | | | |
| 1 recruit examination building | do | 15,535.00 | 1,960.00 | 1,363.00 | 771.00 | 19,629.00 | | Completed. |
| 1 double barrack for 260 men | M. P. | 45,919.00 | 8,040.00 | 5,467.00 | 1,086.00 | 60,512.00 | | |
| Remodeling stables into quarters for 8 noncommissioned officers and barracks for 350 men. | B. & Q. | 81,907.00 | 17,118.00 | | 14,254.00 | [a] 113,279.00 | 193,420.00 | Do. |
| Key West Barracks, Fla., construction band stand | do | 479.00 | | | | [a] 479.00 | 479.00 | Jan. 31, 1908. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Lawton, Wash.:** | | | | | | | | |
| 4 stables for corral | B. & Q. | 12,800.00 | | | | 12,800.00 | | Dec. 30, 1907. |
| 1 veterinary hospital | do. | 1,000.00 | | | | 1,000.00 | | Do. |
| 1 forage and store house | do. | 1,200.00 | | | | 1,200.00 | | Do. |
| 1 blacksmith and saddler's shop | do. | 340.00 | | | | 340.00 | | Do. |
| 1 corral master's office | do. | 270.00 | | | | 270.00 | 24,774.00 | Do. |
| 1 bunk house | do. | 1,030.00 | | | | 1,030.00 | | Do. |
| 1 mess house | do. | 850.00 | | | | 850.00 | | Do. |
| 1 closet | do. | 80.00 | | | | 80.00 | | |
| 1 stable for 36 animals | do. | 6,815.00 | 269.00 | | 120.00 | 7,204.00 | | July 27, 1908. |
| Leavenworth, Kans.: | | | | | | | | |
| Addition to hospital | C. & R., H. | 18,784.00 | [b] 864.00 | 4,916.00 | [b] 632.00 | 25,196.00 | | June 30, 1908. |
| 2 field officers' quarters | B. & Q. | 25,366.00 | 1,529.00 | 1,871.00 | 916.00 | 29,682.00 | | May 11, 1909. |
| 2 double captain's quarters | do. | 61,344.00 | 4,287.00 | 4,708.00 | 2,580.00 | 72,919.00 | | Do. |
| 2 double lieutenant's quarters | do. | 32,954.00 | 2,788.00 | 2,548.00 | 1,878.00 | 40,168.00 | 186,568.00 | May 29, 1909. |
| 1 double lieutenant's quarters | do. | 16,147.00 | | 1,274.00 | 939.00 | 18,360.00 | | Do. |
| Commanding officer's stable | do. | 243.00 | | | | 243.00 | | Jan. 7, 1908. |
| Lincoln N. Dak.: | | | | | | | | |
| 1 coal shed | do. | 2,850.00 | | | | 2,850.00 | | Sept. 27, 1907. |
| Civil employees' quarters | do. | 6,545.00 | 200.00 | | 531.00 | 7,276.00 | | Completed. |
| Enlarging quartermaster's stable | do. | 7,515.00 | | | | 7,515.00 | | May 31, 1908. |
| Root house | do. | 3,872.00 | | | | 3,872.00 | 52,103.00 | Do. |
| Ice house | do. | 4,345.00 | | | | 4,345.00 | | Do. |
| Addition to hospital | C. & R., H. | 5,767.00 | [b] 515.00 | 1,650.00 | [b] 285.00 | 8,217.00 | | Completed. |
| Gymnasium and bowling alley | M. P. E. | 12,783.00 | [b] 1,560.00 | [b] 1,570.00 | [b] 385.00 | 16,298.00 | | Sept. 15, 1908. |
| Addition to wagon shed | B. & Q. | 1,730.00 | | | | 1,730.00 | | Completed. |
| Lyon, Fort, Me.: Temporary barracks and noncommissioned officers' quarters. | do. | 1,080.00 | | | | 1,080.00 | [a] 1,080.00 | |
| Logan, Colo.: | | | | | | | | |
| Addition to hospital | C. & R., H. | 16,450.00 | [b] 1,424.00 | 5,600.00 | 563.00 | 23,937.00 | | Dec. 31 1907. |
| Stable | S. G. & R. | 275.00 | | | | 275.00 | 24,662.00 | |
| Forage house | do. | 450.00 | | | | 450.00 | | Jan. 31 1908. |
| Mackenzie, Wyo.: | | | | | | | | |
| Stable for quartermaster's department, 76 horses | B. & Q. | 15,700.00 | 877.00 | | 347.00 | 16,924.00 | | Jan. 1, 1909. |
| Quartermaster's storehouse | do. | 17,710.00 | 549.00 | 906.00 | 364.00 | 19,529.00 | | Do. |
| Coal shed | do. | 4,100.00 | | | | 4,100.00 | 95,429.00 | Do. |
| Shelter for fire apparatus | do. | 3,650.00 | 158.00 | | | 3,808.00 | | Do. |
| Magazine and ordnance storehouse | do. | 2,316.00 | | | | 2,316.00 | | Do. |
| Hospital building | C. & R., H. | 38,818.00 | [b] 3,860.00 | 4,636.00 | [b] 1,438.00 | 48,752.00 | | Do. |
| Meade, S. Dak.: | | | | | | | | |
| Temporary coal shed | B. & Q. | 2,300.00 | | | | 2,300.00 | | Oct. 10, 1907. |
| Administration building | M. P. | 25,509.00 | 966.00 | 2,200.00 | 505.00 | 29,180.00 | | July 20, 1909. |
| Band barrack for 28 men | do. | 20,359.00 | 1,997.00 | 1,660.00 | 948.00 | 24,964.00 | | Do. |
| Stable and ambulance shed for hospital | B. & Q. | 2,100.00 | | | | 2,100.00 | | Completed. |
| Commanding officer's quarters | M. P. | 21,304.00 | 1,485.00 | 1,340.00 | 871.00 | 25,000.00 | 162,663.00 | July 20, 1909. |
| Quarters for 2 lieutenants | B. & Q. | 22,096.00 | 1,840.00 | 1,640.00 | 1,085.00 | 26,661.00 | | Do. |
| 1 six-set bachelor officers' quarters | do. | 34,669.00 | 3,123.00 | 2,402.00 | 1,432.00 | 41,626.00 | | Do. |
| Root house | do. | 5,820.00 | | | | 5,820.00 | | Oct. 5, 1909. |
| Bowling alley building and alleys | M. P. E. | 4,687.00 | | | [b] 325.00 | 5,012.00 | | Nov. 17, 1908. |
| McDowell, Cal.: Storehouse for Signal Corps | B. & Q. | 14,240.00 | 260.00 | | | 14,500.00 | 14,500.00 | Sept. 14, 1908. |

[a] Work done by purchase of material and hire of labor.

[b] Chargeable to same appropriation as the construction proper.

*Statement showing buildings constructed or in course of construction in the United States from funds of the fiscal year ended June 30, 1908*—Continued.

| Posts and buildings. | Division of cost. | | | | | Total cost for each building. | Total for each post. | Date of completion. |
|---|---|---|---|---|---|---|---|---|
| | Building. | | Fixtures. | | | | | |
| | Appropriation. | Cost. | A. T. Plumbing. | R. S. Heating. | R. S. Lighting. | | | |
| McIntosh, Tex.: | | | | | | | | |
| Shelter for hose cart and hose | B. & Q. | $202.00 | | | | [a] $202.00 | $3,077.00 | Mar. 14, 1908. |
| Coal shed | do | 2,485.00 | | | | 2,485.00 | | Nov. 10, 1908. |
| Bowling alley building and alley | M. P. E. | 5,220.00 | | | [b] $170.00 | 5,390.00 | | |
| McKinley, Me.: | | | | | | | | |
| 1 single coast artillery barrack for 109 men | B. & Q., S. C. D. | 41,887.00 | $4,320.00 | $3,534.00 | 1,011.00 | 50,752.00 | 66,388.00 | Dec. 29, 1908. |
| Bowling alley building, and alley | M. P. E. | 8,363.00 | | | [b] 294.00 | 8,657.00 | | |
| Addition to same | | 6,979.00 | | | | 6,979.00 | | |
| McPherson, Ga.: | | | | | | | | |
| Quartermaster's stable for 76 animals | B. & Q. | 13,879.00 | 630.00 | | 150.00 | 14,659.00 | 18,106.00 | May 5, 1908. |
| Extension of wagon shed | do | 3,447.00 | | | | 3,447.00 | | May 23, 1908. |
| Madison Barracks, N. Y.: | | | | | | | | |
| Remodeling consolidated mess building into administration building and storehouse. | do | 9,051.00 | 700.00 | 1,734.00 | | 11,485.00 | 11,485.00 | Oct. 30, 1908. |
| Mansfield, R. I.: Building for teamsters | do | 251.00 | | | | 251.00 | 251.00 | Nov. 30, 1907. |
| Mason, Cal.: Pontoon shed | do | 500.00 | | | | 500.00 | [b] 500.00 | |
| Missoula, Mont.. | | | | | | | | |
| 2 coal sheds | do | 4,900.00 | | | | 4,900.00 | 10,639.00 | Oct. 22, 1907. |
| 1 root house | do | 5,400.00 | | | | 5,400.00 | | Sept. 30, 1908. |
| Shooting gallery | S. G. & R. | 339.00 | | | | 339.00 | | |
| Monroe, Va.: | | | | | | | | |
| Reconstructing stable | B. & Q. | 2,393.00 | | | | 2,393.00 | 420,932.00 | Dec. 4, 1907. |
| 1 field officers' quarters | B. & Q., S. C. D. | 12,545.00 | 788.00 | 980.00 | 377.00 | 14,690.00 | | Mar 1, 1909. |
| 5 double captains' quarters | do | 110,225.00 | 7,875.00 | 9,250.00 | 3,375.00 | 130,725.00 | | Do. |
| 1 double lieutenants' quarters | do | 18,520.00 | 1,447.00 | 1,442.00 | 662.00 | 22,071.00 | | Do. |
| 3 double noncommissioned staff officers' quarters | do | 17,790.00 | 1,956.00 | | 1,408.00 | 21,154.00 | | Do. |
| 1 ordnance storehouse | do | 24,438.00 | 318.00 | 654.00 | 245.00 | 25,655.00 | | Dec. 21, 1908. |
| 1 artillery school building | do | 113,000.00 | 3,969.00 | 5,850.00 | 3,600.00 | 126,419.00 | | Apr. 1, 1909. |
| 1 enlisted men's building | do | 46,400.00 | 1,600.00 | 2,370.00 | | 50,370.00 | | Do. |
| Converting officers' quarters into quarters for 8 bachelor officers. | do | 22,000.00 | 3,276.00 | 729.00 | 1,450.00 | [a] 27,455.00 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Morgan, Ala.:** | | | | | | | | |
| Bakery | R. S. | 4,128.00 | | | 75.00 | 4,203.00 | | Mar. 31, 1908. |
| Quarters for superintendent of construction | B. & Q. | 875.00 | 125.00 | | | 1,000.00 | | Completed. |
| Civilian employes' quarters | A. T. | 2,500.00 | | | | [a] 2,500.00 | | |
| 1 single coast artillery barrack for 109 men | B. & Q., S. C. D. | 24,383.00 | 125.00 | 3,200.00 | 500.00 | 28,208.00 | 63,873.00 | Feb. 7, 1909. |
| 1 lavatory for barrack | do | 3,987.00 | 2,970.00 | 900.00 | 125.00 | 7,982.00 | | Do. |
| 1 mess hall and kitchen for barrack | do | 5,863.00 | 425.00 | | 175.00 | 6,463.00 | | Do. |
| Gymnasium and bowling alley | M. P. E. | 10,269.00 | [b] 1,461.00 | | [b] 400.00 | 12,130.00 | | Jan. 9, 1909. |
| Dark room and morgue building | C. & R. H. | 1,387.00 | | | | [a] 1,387.00 | | |
| **Moultrie, S. C.:** Deadhouse | do | 2,000.00 | | | | 2,000.00 | 2,000.00 | Mar. 31, 1908. |
| **Myer, Va.:** | | | | | | | | |
| Additions and alterations to officers' quarters | B. & Q. | 10,490.00 | 1,013.00 | 1,200.00 | 855.00 | 13,558.00 | 196,112.00 | Apr. 30, 1908. |
| Addition to cavalry drill hall | do | 11,100.00 | 175.00 | 1,675.00 | | 12,950.00 | | Do. |
| 1 field officers' quarters | do | 14,082.00 | 797.00 | 859.00 | 723.00 | 16,462.00 | | Nov. 21, 1908. |
| 3 double lieutenants' quarters | do | 57,607.00 | 4,425.00 | 3,739.00 | 2,568.00 | 68,339.00 | | Do. |
| 1 single field artillery barrack for 120 men | M. P. | 37,814.00 | 3,587.00 | 3,157.00 | 1,400.00 | 45,958.00 | | Do. |
| Stable for 1 battery field artillery—122 horses | do | 19,690.00 | 515.00 | | | 20,205.00 | | Do. |
| Gun shed for 1 field battery | do | 9,749.00 | 88.00 | | | 9,837.00 | | Do. |
| 1 stable guard and shop building | do | 3,053.00 | | | | 3,053.00 | | Do. |
| Addition to ordnance storehouse | do | 875.00 | | | | 875.00 | | Apr. 8, 1908. |
| Extension to wagon shed | do | 2,300.00 | | | | 2,300.00 | | Sept. 19, 1908. |
| 1 stable guard and shop building | do | 2,575.00 | | | | 2,575.00 | | Do. |
| **Niagara, N. Y.:** | | | | | | | | |
| Post exchange and bowling alleys | M. P. E. | 21,963.00 | [b] 1,870.00 | [b] 2,340.00 | [b] 420.00 | 26,593.00 | 27,472.00 | July 17, 1909. |
| 2 target houses | S. G. & R. | 879.00 | | | | 879.00 | | Nov. 19, 1908. |
| **Omaha, Nebr.:** | | | | | | | | |
| Wireless telegraph station | B. & Q. | 2,760.00 | | | | 2,760.00 | 61,892 | Apr. 30, 1908. |
| Hydrogen gas house | do | 7,650.00 | | | | 7,650.00 | | July 31, 1908. |
| Balloon house | M. P. | 35,996.00 | | | | 35,996.00 | | Completed. |
| Temporary coal shed | B. & Q. | 1,050.00 | | | | [a] 1,050.00 | | Sept. 23, 1907. |
| Wagon shed | do | 2,915.00 | | | | 2,915.00 | | July 31, 1908. |
| Storage shed for signal corps property | do | 5,122.00 | | | | 5,122.00 | | Do. |
| Temporary shelter for animals | do | 350.00 | | | | [a] 350.00 | | Do. |
| Bakery | R. S. | 4,864.00 | 500.00 | 400.00 | 285.00 | 6,049.00 | | Oct. 5, 1908. |
| **Oglethorpe, Ga.:** | | | | | | | | |
| Veterinary stable | B. & Q. | 13,859.00 | 1,096.00 | 778.00 | 302.00 | 16,035.00 | 25,927.00 | Nov. 1, 1908. |
| Post exchange | M. P. E. | 8,040.00 | [b] 812.00 | [b] 761.00 | [b] 279.00 | 9,892.00 | | Dec. 22, 1908. |
| **Ontario, N. Y.:** | | | | | | | | |
| Addition to stable | B. & Q. | 4,206.00 | | | | 4,206.00 | 5,256.00 | Feb. 9, 1908. |
| Addition to wagon shed | do | 1,050.00 | | | | 1,050.00 | | Aug. 20, 1908. |
| **Philadelphia depot, Pa.:** | | | | | | | | |
| Alterations and improvements to storehouse No. 2 | M. P. | 27,672.00 | | 3,335.00 | | 31,007.00 | 70,749.00 | May 31, 1908. |
| Alterations and improvements to storehouse No. 3 | do | 37,452.00 | | 2,290.00 | | 39,742.00 | | May 18, 1908. |
| **[illegible]ne Camp, N. Y.:** Field mess shelters | B. & Q. | 5,710.00 | | | | 5,710.00 | 5,710.00 | June 14, 1908. |
| **[illegible]ptaburg Barracks, N. Y.:** | | | | | | | | |
| 1 quartermasters' stable for 76 horses | do | 16,797.00 | 350.00 | | 111.00 | 17,258.00 | 21,215.00 | Aug. 30, 1908. |
| [illegible]gon shed | do | 3,957.00 | | | | 3,957.00 | | June 30, 1908. |
| **[illegible]f San Francisco Army General Hospital:** | | | | | | | | |
| [illegible]le captains' quarters | do | 17,506.00 | 1,650.00 | 924.00 | 819.00 | 20,899.00 | 55,691.00 | Sept. 5, 1908. |
| [illegible]le lieutenants' quarters | do | 28,664.00 | [illegible] 700.00 | 2,110.00 | 1,318.00 | 34,792.00 | | Do. |

[a] Work done by purchase of material and hire of labor.

[b] Chargeable to same appropriation as the construction proper.

*Statement showing buildings constructed or in course of construction in the United States from funds of the fiscal year ended June 30, 1908*—Continued.

| Posts and buildings. | Division of cost. | | | | | Total cost for each building. | Total for each post. | Date of completion. |
|---|---|---|---|---|---|---|---|---|
| | Building. | | Fixtures. | | | | | |
| | Appropriation. | Cost. | A. T. Plumbing. | R. S. | | | | |
| | | | | Heating. | Lighting. | | | |
| Presidio of Monterey, Cal.: | | | | | | | | |
| Addition to band barracks, 28 men | B. & Q. | $2,595.00 | | | | $2,595.00 | $16,861.00 | May 11, 1908. |
| 2 double noncommissioned staff officers' quarters | do | 5,966.00 | $1,280.00 | | $350.00 | 7,596.00 | | July 7, 1908. |
| Magazine for ordnance | do | 2,096.00 | | | | 2,096.00 | | Sept. 30, 1908. |
| Bowling alley building and alleys | M. P. E. | 4,189.00 | | | [a] 385.00 | 4,574.00 | | Oct. 29, 1908. |
| Presidio of San Francisco, Cal.: | | | | | | | | |
| Shed for animals | B. & Q. | 975.00 | | | | [b] 975.00 | 5,691.00 | Sept. 30, 1907. |
| Band stand | do | 483.00 | | | | [b] 483.00 | | Nov. 30, 1907. |
| Signal corps storehouse | do | 3,330.00 | | | | 3,330.00 | | Do. |
| Gun shed | do | 306.00 | | | | 306.00 | | Mar. 31, 1908. |
| Addition to gun shed | do | 597.00 | | | | [b] 597.00 | | |
| Riley, Kans.: | | | | | | | | |
| Bungalow | M. P. E. | 3,445.00 | | | | 3,445.00 | 347,678.00 | Sept. 30, 1907. |
| Temporary coal shed | B. & Q. | 3,404.00 | | | | 3,404.00 | | Dec. 31, 1907. |
| Addition to hospital | C. & R. H. | 26,082.00 | 3,722.00 | $3,241.00 | 683.00 | 33,678.00 | | Mar. 16, 1909. |
| 1 double hospital corps sergeants' quarters | H. S. Q. | 7,995.00 | 618.00 | | 795.00 | 9,408.00 | | Do. |
| 1 band barrack for 28 men | B. & Q. | 14,242.00 | 1,850.00 | 1,437.00 | 419.00 | 17,948.00 | | Do. |
| 1 field officers' quarters | do | 11,505.00 | 825.00 | 952.00 | 563.00 | 13,845.00 | | Do. |
| 2 double lieutenants' quarters | do | 31,492.00 | 3,100.00 | 2,667.00 | 1,592.00 | 38,851.00 | | Do. |
| 2 double noncommissioned officers' quarters | do | 11,310.00 | 1,600.00 | | 836.00 | 13,746.00 | | Do. |
| 28 sets (4 sections) bachelor officers' quarters | do | 58,860.00 | 9,187.00 | 5,066.00 | 3,784.00 | 76,897.00 | | Oct. 16, 1908. |
| Shelter for enlisted men | do | 735.00 | | | | [b] 735.00 | | June 16, 1908. |
| 1 quartermaster stable and wagon shed | do | 17,940.00 | 515.00 | | 230.00 | 18,685.00 | | Mar. 16, 1909. |
| Annex and alteration to artillery administration building. | do | 24,886.00 | 1,300.00 | 2,751.00 | 2,175.00 | 31,112.00 | | Do. |
| Addition to ordnance storehouse | do | 5,673.00 | 230.00 | | 293.00 | 6,196.60 | | Nov. 16, 1908. |
| Regimental field artillery building | M. P. | 27,836.00 | 2,544.00 | 2,495.00 | 815.00 | 33,690.00 | | Mar. 25, 1909. |
| Alterations and additions to 9 artillery stables | B. & Q. | 41,058.00 | 3,497.00 | | 1,483.00 | 46,038.00 | | Dec. 25, 1908. |
| Rodeo Valley, Cal. (department rifle range): Stable and wagon shed. | do | 1,961.00 | | | | [b] 1,961.00 | 1,961.00 | |
| Rosecrans, Cal.: Post exchange and gymnasium | M. P. E. | 22,790.00 | [a] 2,147.00 | [a] 1,800.00 | [a] 900.00 | 27,637.00 | 27,637.00 | Feb. 23, 1909. |
| St. Michael, Alaska: | | | | | | | | |
| Quarters for noncommissioned officers | B. & Q. | 1,500.00 | | | | [b] 1,500.00 | 2,162.00 | |
| Enlarging guardhouse | do | 662.00 | | | | [b] 662.00 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sam Houston, Tex.: | | | | | | | | |
| 1 hospital sergeant's quarters | H. S. Q. | 4,450.00 | 419.00 | ..... | 247.00 | 5,116.00 | | Jan. 31, 1908. |
| Deadhouse | C. & R. H. | 2,970.00 | [a] 436.00 | ..... | [a] 41.00 | 3,447.00 | | Do. |
| 8 cavalry stables for 88 horses each | B. & Q. | 50,400.00 | ..... | ..... | ..... | 50,400.00 | 82,169.00 | Dec. 31, 1908. |
| 1 quartermaster's stable for 88 horses | do | 5,700.00 | ..... | ..... | ..... | 5,700.00 | | Do. |
| 1 stable for field staff and band | do | 5,100.00 | ..... | ..... | ..... | 5,100.00 | | Do. |
| 1 bakery | R. S. | 10,886.00 | 1,070.00 | 121.00 | 329.00 | 12,406.00 | | Do. |
| Sandy Hook, N. J.: Converting building No. 4 into post exchange. | M. P. E. | 1,217.00 | [a] 348.00 | ..... | ..... | 1,565.00 | 1,565.00 | Completed. |
| Sill, Okla.: | | | | | | | | |
| Temporary stable for regimental and battalion company and noncommissioned staff band, etc. | B. & Q. | 2,222.00 | ..... | ..... | ..... | 2,222.00 | 4,766.00 | Dec. 20, 1907. |
| 3 temporary gun sheds | do | 2,544.00 | ..... | ..... | ..... | 2,544.00 | | Completed. |
| Slocum, N. Y.: | | | | | | | | |
| 1 double barrack for 260 men | M. P. | 61,013.00 | 7,336.00 | 5,486.00 | 1,869.00 | 75,704.00 | | July 10, 1908. |
| Recruit examination building | B. & Q. | 18,205.00 | 2,090.00 | 1,523.00 | 1,170.00 | 22,988.00 | | |
| Enlargement, reconstruction, etc., of general mess building. | M. P. | 40,100.00 | 2,386.00 | 6,605.00 | 1,623.00 | 50,714.00 | | June 15, 1908. |
| 2 double barracks for 520 men | do | 120,241.00 | 15,674.00 | 11,150.00 | 3,300.00 | 150,365.00 | | Dec. 1, 1908. |
| Wagon shed | B. & Q. | 3,530.00 | ..... | ..... | ..... | 3,530.00 | 427,144.00 | Do. |
| Quartermaster's storehouse | do | 17,395.00 | ..... | ..... | ..... | 17,395.00 | | Do. |
| 1 double noncommissioned staff officers' quarters | do | 7,026.00 | 986.00 | ..... | 448.00 | 8,460.00 | | Do. |
| Band stand | do | 1,026.00 | ..... | ..... | ..... | 1,026.00 | | Do. |
| Addition to post hospital | C. & R. H. | 17,015.00 | 1,861.00 | [a] 2,121.00 | [a] 737.00 | 21,734.00 | | June 20, 1908. |
| Administration building | M. P. | 25,348.00 | 1,206.00 | 1,660.00 | 841.00 | 29,055.00 | | Nov. 17, 1908. |
| Drill hall and gymnasium | do | 40,711.00 | 1,677.00 | 2,946.00 | 839.00 | 46,173.00 | | Do. |
| Snelling, Minn.: | | | | | | | | |
| Coal shed | B. & Q. | 1,800.00 | ..... | ..... | ..... | 1,800.00 | 4,579.00 | Oct. 5, 1907. |
| Extension of field artillery stable for 134 animals | do | 2,600.00 | 138.00 | ..... | 41.00 | 2,779.00 | | Aug. 31, 1908. |
| Stevens, Oreg.: 1 single coast artillery barrack, 109 men | B. & Q., S. C. D. | 30,827.00 | 5,443.00 | 3,747.00 | 1,520.00 | 41,537.00 | 41,537.00 | July 31, 1908. |
| Terry, N. Y.: Bakery | R. S. | 8,560.00 | 610.00 | 343.00 | 150.00 | 9,663.00 | 9,663.00 | Oct. 1, 1908. |
| Thomas, Ky.: | | | | | | | | |
| Quartermaster's stable for 76 animals | B. & Q. | 13,144.00 | 600.00 | ..... | 200.00 | 13,944.00 | 21,259.00 | June 26, 1907. |
| Wagon shed | do | 3,200.00 | ..... | ..... | ..... | 3,200.00 | | Do. |
| Coal shed | do | 4,115.00 | ..... | ..... | ..... | 4,115.00 | | Sept. 5, 1908. |
| Totten, N. Y.: Commanding officers' quarters | B. & Q., S. C. D. | 21,370.00 | ..... | 1,120.00 | 1,208.00 | 23,698.00 | 23,698.00 | Nov. 30, 1908. |
| Vancouver Barracks, Wash.: | | | | | | | | |
| 2 coal sheds | B. & Q. | 7,050.00 | ..... | ..... | ..... | 7,050.00 | 9,050.00 | Nov. 12, 1907. |
| 2 wood sheds | do | 2,000.00 | ..... | ..... | ..... | [b] 2,000.00 | | |
| Ward, Wash.: Temporary portable building for shelter of picket guard. | B. & Q. | 139.00 | ..... | ..... | ..... | [b] 139.00 | 139.00 | |
| Walter Reed Army General Hospital: | | | | | | | | |
| 1 double Hospital Corps sergeants quarters | H. S. Q. | 11,298.00 | [a] 1,000.00 | ..... | [a] 609.00 | 12,907.00 | 13,732.00 | Apr. 24, 1908. |
| 1 coal vault | Special | 825.00 | ..... | ..... | ..... | 825.00 | | |
| Washington Barracks, D. C.: | | | | | | | | |
| Remodeling and addition to bakery | R. S. | 9,763.00 | 750.00 | 1,595.00 | 416.00 | 12,524.00 | 12,674.00 | Dec. 7, 1908. |
| Shelter for field ovens | do | 150.00 | ..... | ..... | ..... | [b] 150.00 | | |

[a] Chargeable to same appropriation as the construction proper.

[b] Work done by purchase of material and hire of labor.

*Statement showing buildings constructed or in course of construction in the United States from funds of the fiscal year ended June 30, 1908*—Continued.

| Posts and buildings. | Division of cost. | | | | | Total cost for each building. | Total for each post. | Date of completion. |
|---|---|---|---|---|---|---|---|---|
| | Building. | | Fixtures. | | | | | |
| | Appropriation. | Cost. | A. T. Plumbing. | R. S. | | | | |
| | | | | Heating. | Lighting. | | | |
| Washington, Md.: | | | | | | | | |
| 1 double coast artillery barrack for 218 men | B. & Q., S. C. D | $64,900.00 | $8,775.00 | $5,325.00 | $1,544.00 | $80,544.00 | | Sept. 3, 1908. |
| Remodeling hospital building into 1 double set non-commissioned staff officers' quarters. | B. & Q | 331.00 | 285.00 | | | [a] 616.00 | | |
| Bowling alley building and alleys | M. P. E | 5,257.00 | | | [b] 349.00 | 5,606.00 | $86,766.00 | Oct. 28, 1908. |
| Wayne, Mich.: | | | | | | | | |
| Remodeling old guardhouse into office building | B. & Q | 1,710.00 | 447.00 | 437.00 | 257.00 | 2,851.00 | | |
| Stable for gun platoon for 76 animals | do | 12,500.00 | | | 168.00 | 12,668.00 | 15,519.00 | Nov. 30, 1908. |
| West Point, N. Y.: Branch post exchange | M. P. E | 22,770.00 | [b] 1,500.00 | [b] 945.00 | [b] 750.00 | 25,965.00 | 25,965.00 | Apr. 15, 1908. |
| Whipple Barracks, Ariz.: Hospital | C. & R., H | 31,850.00 | [b] 2,550.00 | 3,325.00 | [b] 550.00 | 38,275.00 | 38,275.00 | Oct. 20, 1909. |
| Williams, Me.: | | | | | | | | |
| 1 double coast artillery barrack for 218 men | B. & Q., S. C. D | 78,459.00 | 9,380.00 | 5,134.00 | 1,925.00 | 94,898.00 | | Mar. 31, 1909. |
| Temporary frame office building | B. & Q | 200.00 | | | | [a] 200.00 | 117,090.00 | |
| Gymnasium and bowling alley | M. P. E | 17,990.00 | [b] 1,797.00 | [b] 1,181.00 | [b] 1,024.00 | 21,992.00 | | Dec. 31, 1908. |
| Wingate, N. Mex.: Shelter for quartermaster employees. | B. & Q | 247.00 | | | | [a] 247.00 | 247.00 | |
| Wm. H. Harrison, Mont.: | | | | | | | | |
| 2 coal sheds | do | 4,325.00 | | | | 4,325.00 | | Oct. 21, 1907. |
| Addition to quartermaster stable | do | 6,025.00 | 485.00 | | 57.00 | 6,567.00 | 26,625.00 | Dec. 14, 1908. |
| Band stand | do | 656.00 | | | | 656.00 | | Dec. 22, 1908. |
| Commissary storehouse | do | 13,250.00 | 650.00 | 950.00 | 227.00 | 15,077.00 | | Do. |
| Worden, Wash.: | | | | | | | | |
| 1 double coast artillery barrack for 218 men | B. & Q., S. C. D | 56,500.00 | 8,900.00 | 7,700.00 | 2,100.00 | 75,200.00 | 76,460.00 | Nov. 20, 1908. |
| Enlarging ordnance repair shops | B. & Q | 1,260.00 | | | | [a] 1,260.00 | 25,737.00 | |
| Wood, New York Harbor: 1 double captains' quarters | do | 21,712.00 | 1,540.00 | 1,710.00 | 775.00 | 25,737.00 | | July 31, 1908. |
| Yellowstone, Wyo.: | | | | | | | | |
| Building for detachment of troops | do | 600.00 | | | | [a] 600.00 | | Sept. 30, 1907. |
| Bowling alley, double | M. P. E | 525.00 | | | | [a] 525.00 | | |
| 1 double cavalry barrack for 130 men | M. P | 34,197.00 | | | | [a] 34,197.00 | | |
| 2 cavalry stables for 94 horses each | B. & Q | 18,724.00 | | | | [a] 18,724.00 | | |
| 1 field officer's quarters | do | 17,273.00 | 1,139.00 | 1,386.00 | 825.00 | 20,623.00 | 152,123.00 | Dec. 30, 1908. |
| 1 double captain's quarters | do | 27,163.00 | 1,600.00 | 1,951.00 | 1,223.00 | 31,937.00 | | Do. |
| 1 5-set bachelor officers' quarters | do | 31,568.00 | 2,765.00 | 2,162.00 | 1,525.00 | 38,020.00 | | Do. |
| 1 double stable guard and shop buildings | do | 7,497.00 | | | | 7,497.00 | | Do. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Alaska, posts in—** | | | | | | | | |
| Hot Springs, addition to telegraph station | do | 433.81 | | | | 433.81 | [a] 433.81 | July 31, 1907. |
| Tolavana, addition to telegraph station | do | 1,203.35 | | | | 1,203.35 | [a] 1,203.35 | Do. |
| Chena, addition to telegraph station | do | 500.00 | | | | 500.00 | [a] 500.00 | Do. |
| Between Rapids and Rampart, addition to telegraph station | do | 950.00 | | | | 950.00 | [a] 950.00 | Do. |
| Gulkana, Valdez: Fairbanks cut-off line between McCarthy & Richardson cabins | do | 13,137.05 | | | | 13,137.05 | [a] 13,137.05 | |
| Richardson, telegraph station | do | 880.00 | | | | 880.00 | [a] 880.00 | Do. |
| Mentasta, telegraph station | do | 1,350.00 | | | | 1,350.00 | [a] 1,350.00 | Do. |
| Between Paxtons and McCallum, shelter for Signal Corps | do | 1,200.00 | | | | 1,200.00 | [a] 1,200.00 | |
| Between McCallum and Donnelys, shelter for Signal Corps | do | 700.00 | | | | 700.00 | [a] 700.00 | |
| Between Donnelys and McCarthys, shelter for Signal Corps | do | 700.00 | | | | 700.00 | [a] 700.00 | |
| Valdez, Signal Corps storehouse and stable | do | 7,500.00 | | | | 7,500.00 | [a] 7,500.00 | |
| Salcha, purchase 2 cabins and fitting up same | do | 668.90 | | | | 668.90 | 668.90 | |
| Total | | 4,317,504.11 | 333,356.00 | 267,039.00 | 140,362.00 | 5,058,261.11 | 5,058,261.11 | |

[a] Work done by purchase of material and hire of labor.

[b] Chargeable to same appropriation as the construction proper.

*Statement of construction work authorized in the United States from funds of fiscal year 1907, but not completed when the annual report was rendered for fiscal year 1907.*

| Posts and buildings. | Division of cost. Building. Appropriation. | Building. Cost. | Fixtures. A. T. Plumbing. | Fixtures. R. S. Heating. | Fixtures. R. S. Lighting. | Total cost for each building. | Total for each post. | Date of completion. |
|---|---|---|---|---|---|---|---|---|
| Adams, R. I: Artillery engineer storehouse | B. & Q. | $9,150.00 | $316.00 | | $157.00 | $9,623.00 | $9,623.00 | July 31, 1907. |
| Andrews, Mass.: Administration building | M. P. | 21,544.00 | 1,197.00 | $1,587.00 | 361.00 | 24,689.00 | 24,689.00 | Dec. 27, 1907. |
| Benjamin Harrison, Ind.: | | | | | | | | |
| 1 double-set engineers' quarters | B. & Q. | 10,252.00 | 1,075.00 | | | 11,327.00 | 28,922.00 | Nov. 30, 1907. |
| 1 eight-set civilian employees' quarters | do. | 9,478.00 | 760.00 | | | 10,238.00 | | Do. |
| Terminal station building | do. | 6,417.00 | 940.00 | | | 7,357.00 | | Do. |
| Boise barracks, Idaho: | | | | | | | | |
| 1 double-set captains' quarters | do. | 19,600.00 | 1,646.00 | | | 21,246.00 | 115,500.00 | Jan. 31, 1908. |
| 1 double-set lieutenants' quarters | do. | 15,900.00 | 1,666.00 | | | 17,566.00 | | Mar. 9, 1908. |
| 1 double-cavalry barrack | M. P. | 57,332.00 | 5,631.00 | | | 62,963.00 | | Apr. 27, 1907. |
| 1 guardhouse | B. & Q. | 12,490.00 | 1,235.00 | | | 13,725.00 | | Do. |
| Columbus barracks, Ohio: Hospital | C. & R. H. | 86,647.00 | 9,518.00 | | 3,277.00 | 99,442.00 | 99,442.00 | July 31, 1908. |
| Dade, Fla.: | | | | | | | | |
| 1 Commanding officers' quarters | B. & Q. | 15,276.00 | 800.00 | | 300.00 | 16,376.00 | 31,901.00 | Apr. 30, 1908. |
| 1 set noncommissioned staff officers' quarters | do. | 4,400.00 | 360.00 | | 75.00 | 4,835.00 | | Do. |
| 2 civilian employees' quarters | do. | 9,800.00 | 720.00 | | 170.00 | 10,690.00 | | Do. |
| Des Moines, Iowa: | | | | | | | | |
| Veterinary hospital | do. | 16,537.00 | 1,438.00 | 822.00 | 319.00 | 19,116.00 | | Nov. 30, 1907. |
| Alterations and improvements on subsistence storehouse | do. | 9,024.00 | 307.00 | | | 9,331.00 | | Oct. 31, 1907. |
| Shelter for mounted guard | do. | 1,857.00 | 277.00 | | | 2,134.00 | 30,581.00 | Nov. 30, 1907. |
| D. A. Russell, Wyo.: | | | | | | | | |
| 4 field officers' quarters | do. | 54,000.00 | 3,084.00 | | | 57,084.00 | 671,155.00 | Mar. 31, 1908. |
| 1 double noncommissioned staff officers' quarters | do. | 5,945.00 | 561.00 | | | 6,506.00 | | Do. |
| 4 field artillery stables | do. | 76,220.00 | 2,366.00 | | | 78,586.00 | | Do. |
| 4 field artillery shops | do. | 9,864.00 | | | | 9,864.00 | | Do. |
| 2 double field artillery guard buildings | do. | 5,100.00 | | | | 5,100.00 | | Do. |
| 1 veterinary hospital | M. P. | 23,087.00 | 1,120.00 | | | 24,207.00 | | Aug. 31, 1908. |
| 1 hay shed | B. & Q. | 4,738.00 | | | | 4,738.00 | | Do. |
| 1 fire-engine house | do. | 3,309.00 | 77.00 | | | 3,386.00 | | Mar. 31, 1908. |
| 2 double field artillery barracks | M. P. | 152,400.00 | 14,945.00 | | | 167,345.00 | | May 30, 1908. |
| 1 granary | B. & Q. | 7,850.00 | | | | 7,850.00 | | Do. |
| 3 double captains' quarters | do. | 68,700.00 | 4,408.00 | | | 73,108.00 | | Do. |
| 2 double lieutenants' quarters | do. | 32,700.00 | 2,696.00 | | | 35,396.00 | | July 31, 1908. |
| 1 six set bachelor officers' quarters | do. | 29,950.00 | 2,513.00 | | | 32,463.00 | | Mar. 31, 1908. |
| 4 field artillery gun sheds | do. | 48,440.00 | | | | 48,440.00 | | Jan. 31, 1908. |
| 1 hospital | C. & R-H. | 113,997.00 | a 3,065.00 | | | 117,062.00 | | June 28, 1909. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Ethan Allen, Vt.:** | | | | | | | | |
| 1 veterinary hospital | M. P. | 20,457.00 | 600.00 | 500.00 | 279.00 | 21,836.00 | 33,217.00 | Dec. 31, 1907. |
| Converting administration building into quarters for 6 unmarried officers. | B. & Q. | 3,130.00 | 800.00 | 125.00 | 440.00 | 4,495.00 | | Aug. 30, 1907. |
| Enlargement of 2 field artillery stables | do | 6,700.00 | 186.00 | | | 6,886.00 | | Do. |
| **Hamilton, N. Y.:** | | | | | | | | |
| 1 double coast artillery barrack | M. P. | 78,870.00 | 7,409.00 | | | 86,279.00 | 149,995.00 | Aug. 31, 1908. |
| 1 eight set bachelor officers' quarters | B. & Q. | 32,700.00 | 3,492.00 | | | 36,192.00 | | Do. |
| Post exchange and gymnasium building | M. P. E. | 23,100.00 | a 1,777.00 | a 2,067.00 | a 580.00 | 27,524.00 | | July 31, 1908. |
| **Hancock, N. J.:** | | | | | | | | |
| 1 ordnance engineer and signal storehouse and office building. | B. & Q. | 9,865.00 | | | | 9,865.00 | 21,097.00 | Jan. 18, 1908. |
| 1 picket guardhouse | do | 3,784.00 | 525.00 | | | 4,309.00 | | Do. |
| 1 double set civilian employees' quarters | do | 5,956.00 | 967.00 | | | 6,923.00 | | Do. |
| **H. G. Wright, N. Y.:** | | | | | | | | |
| 1 four set bachelor officers' quarters | do | 24,719.00 | 2,590.00 | | | 27,309.00 | 52,431.00 | Mar. 6, 1908. |
| Post exchange and gymnasium | M. P. E. | 19,931.00 | a 2,236.00 | a 1,775.00 | a 1,180.00 | 25,122.00 | | May 11, 1908. |
| Huachuca, Ariz.: 1 lavatory | B. & Q. | 2,500.00 | 4,400.00 | | | 6,900.00 | 6,900.00 | Feb. 15, 1908. |
| Jefferson Barracks, Mo.: 1 hospital | C. & R-H. | 65,857.00 | a 6,800.00 | | a 1,895.00 | 74,552.00 | 74,552.00 | June 30, 1908. |
| Lawton, Wash.: 1 set teamsters' quarters | B. & Q. | 8,050.00 | 1,220.00 | | | 9,270.00 | 9,270.00 | Jan. 20, 1908. |
| **Leavenworth, Kans.:** | | | | | | | | |
| 2 engineers' stables | do | 26,638.00 | 1,295.00 | | | 27,933.00 | 271,145.00 | Nov. 30, 1907. |
| 1 double stable guard building | do | 3,040.00 | | | 63.00 | 3,103.00 | | Dec. 1, 1907. |
| 2 pontoon sheds | do | 14,729.00 | | | | 14,729.00 | | Dec. 31, 1907. |
| 8 double sets noncommissioned staff officers' quarters. | do | 62,208.00 | 4,705.00 | | 1,953.00 | 68,866.00 | | Oct. 31, 1907. |
| 1 engineer workshop | do | 10,443.00 | | | | 10,443.00 | | July 31, 1908. |
| 1 quartermaster shop | do | 15,987.00 | | | | 15,987.00 | | Do. |
| 1 vegetable storehouse | do | 6,878.00 | | | | 6,878.00 | | Aug. 31, 1907. |
| 1 cavalry drill hall | M. P. | 73,350.00 | | | | 73,350.00 | | July 31, 1908. |
| 1 quartermaster storehouse | do | 38,874.00 | 855.00 | | | 39,729.00 | | Sept. 31, 1908. |
| Enlargement quartermaster storehouse | B. & Q. | 10,127.00 | | | | 10,127.00 | | Nov. 30, 1907. |
| Mason, Cal.: Temporary barracks for engineers | do | 10,000.00 | 2,302.00 | | | 12,302.00 | 12,302.00 | Sept. 30, 1907. |
| Meade, S. Dak.: 1 cavalry barrack | M. P. | 37,910.00 | 3,194.00 | 3,656.00 | 1,090.00 | 45,850.00 | 45,850.00 | Mar. 31, 1908. |
| **Morgan, Ala.:** | | | | | | | | |
| Fire station | B. & Q. | 1,714.00 | | | | 1,714.00 | | Do. |
| Ordnance storehouse | do | 4,370.00 | | | | 4,370.00 | 21,036.00 | Jan. 31, 1908. |
| Quartermaster's stable | do | 7,169.00 | 300.00 | | | 7,469.00 | | Feb. 29, 1908. |
| Searchlight shelter | do | 962.00 | | | | 962.00 | | Do. |
| Quartermaster's workshop | do | 5,953.00 | | | | 5,953.00 | | Do. |
| Oil house | do | 568.00 | | | | 568.00 | | Mar. 31, 1908. |
| **Niagara, N. Y.:** | | | | | | | | |
| 1 double captain's quarters | M. P. Ft. | 17,662.00 | 1,481.00 | a 1,639.00 | a 600.00 | 21,382.00 | 162,360.00 | Sept. 19, 1908. |
| 1 6-set bachelor officers' quarters | Niagara | 19,237.00 | a 2,815.00 | a 2,358.00 | a 500.00 | 24,910.00 | | Do. |
| 2 double infantry barracks | N. Y. | 92,794.00 | 12,091.00 | a 9,182.00 | a 2,000.00 | 116,068.00 | | Do. |
| **Oglethorpe, Ga.:** | | | | | | | | |
| School building | B. & Q. | 14,263.00 | 1,357.00 | | | 15,620.00 | 17,659.00 | Jan. 1, 1908. |
| Stable guard building | do | 1,289.00 | | | | 1,289.00 | | Sept. 30, 1907. |
| Shelter for mounted guard | do | 750.00 | | | | 750.00 | | July 22, 1907. |
| **Presidio of Monterey, Cal.:** | | | | | | | | |
| 1 double set hospital corps sergeants' quarters | H. S. Q. | 4,020.00 | a 550.00 | | a 80.00 | 4,650.00 | 4,650.00 | Sept. 30, 1907. |

a Chargeable to same appropriation as construction proper.

*Statement of construction work authorized in the United States from funds of fiscal year 1907, but not completed when the annual report was rendered for fiscal year 1907*—Continued.

| Posts and buildings. | Division of cost. | | | | | Total cost for each building. | Total for each post. | Date of completion. |
|---|---|---|---|---|---|---|---|---|
| | Building. | | Fixtures. | | | | | |
| | Appropriation. | Cost. | A. T. | R. S. | | | | |
| | | | Plumbing. | Heating. | Lighting. | | | |
| Presidio of San Francisco General Hospital: | | | | | | | | |
| Post exchange and gymnasium | M. P. E. | $14,718.00 | [a] $1,100.00 | [a] $1,425.00 | [a] $602.00 | $17,845.00 | $17,845.00 | July 31, 1907. |
| Riley, Kans.: | | | | | | | | |
| Stable for school of equitation | B. & Q. | 17,979.00 | | | | 17,979.00 | 203,335.00 | Nov. 30, 1907. |
| Cavalry drill hall | M. P. | 75,000.00 | | | | 75,000.00 | | July 31, 1908. |
| Veterinary laboratory | B. & Q. | 3,017.00 | 150.00 | 275.00 | 135.00 | 3,577.00 | | Feb. 29, 1908. |
| Quartermaster's storehouse | do | 12,363.00 | | | | 12,363.00 | | Do. |
| Extension of coal shed | do | 5,567.00 | | | | 5,567.00 | | Dec. 31, 1907. |
| Stable for medical department | do | 10,321.00 | 614.00 | 220.00 | | 11,155.00 | | Mar. 31, 1908. |
| Barracks for cooks and bakers | M. P. | 50,867.00 | 6,400.00 | 4,700.00 | 1,595.00 | 63,562.00 | | June 30, 1908. |
| Granary | B. & Q. | 14,132.00 | | | | 14,132.00 | | Completed. |
| Robinson, Nebr.: | | | | | | | | |
| 2 double cavalry barracks | M. P. | 114,000.00 | 12,552.00 | | | 126,552.00 | | Apr. 15, 1909. |
| 4 cavalry stables | B. & Q. | 69,160.00 | 2,616.00 | | | 17,776.00 | | Do. |
| 1 field officers' quarters | do | 15,000.00 | 767.00 | | | 15,767.00 | | Do. |
| 2 double captain's quarters | do | 51,170.00 | 2,890.00 | | | 54,060.00 | | Do. |
| 1 double lieutenants' quarters | do | 22,000.00 | 1,448.00 | | | 23,448.00 | | Do. |
| 1 10-set bachelor officers' quarters | do | 39,300.00 | 4,162.00 | | | 43,462.00 | | Do. |
| 2 double cavalry stable guard and shop buildings | do | 9,400.00 | | | | 9,400.00 | | Do. |
| 1 veterinary hospital | M. P. | 20,547.00 | 1,160.00 | | | 21,707.00 | | Do. |
| The above buildings are under construction to be completed August 15, 1908, but the contractor having defaulted, a contract has recently been made with bondsmen to complete the work by April 15, 1909. | | | | | | | | |
| Sam Houston, Tex.: | | | | | | | | |
| 1 colonel's quarters | B. & Q. | 16,251.00 | 1,235.00 | 1,499.00 | | 18,985.00 | 796,733.00 | Dec. 31, 1908. |
| 14 single sets officers' quarters | do | 193,200.00 | 12,614.00 | 18,760.00 | | 224,574.00 | | Do. |
| 8 single lieutenants' quarters | do | 91,232.00 | 6,648.00 | 8,152.00 | | 106,032.00 | | Do. |
| 1 10-set bachelor officers' quarters | do | 32,024.00 | 4,783.00 | 3,748.00 | | 40,555.00 | | Do. |
| 7 single noncommissioned staff officers' quarters | do | 34,804.00 | 2,289.00 | | | 37,093.00 | | Do. |
| 1 band barrack | do | 12,500.00 | | | | 12,500.00 | | Do. |
| 8 single cavalry barracks | M. P. | 194,400.00 | | | | 194,400.00 | | Do. |
| 4 double company mess rooms, etc | B. & Q. | 58,108.00 | 2,400.00 | | | 60,508.00 | | Do. |
| 8 company lavatories | do | 32,000.00 | 21,016.00 | 7,168.00 | | 60,184.00 | | Do. |
| 1 combined mess room and kitchen | do | 5,973.00 | 1,458.00 | | | 7,431.00 | | Do. |
| 2 double stable guard buildings | do | 7,816.00 | | | | 7,816.00 | | June 30, 1908. |
| 1 hay shed | do | 5,695.00 | | | | 5,695.00 | | Dec. 31, 1908. |
| 1 granary | do | 4,990.00 | | | | 4,990.00 | | July 31, 1908. |
| 1 veterinary hospital | do | 14,637.00 | 1,333.00 | | | 15,970.00 | | Dec. 31, 1908. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Shafter, H. T.: Post exchange and bowling alley | M. P. E. | 17,699.00 | a2,300.00 | ..... | a950.00 | 20,949.00 | 20,949.00 | Nov. 30, 1907. |
| St. Philip, La.: Post exchange and gymnasium | ....do | 13,416.00 | a860.00 | ..... | a350.00 | 14,626.00 | 14,626.00 | June 6, 1908. |
| Snelling, Minn.: | | | | | | | | |
| Cavalry drill hall | M. P. Fort Snelling | 42,762.00 | ..... | ..... | ..... | 42,762.00 | | Sept. 30, 1907. |
| 1 quartermaster's shop | B. & Q. | 7,337.00 | ..... | ..... | ..... | 7,337.00 | 64,521.00 | Oct. 31, 1907. |
| 1 civilian employee's quarters | .....do | 12,827.00 | 1,595.00 | ..... | ..... | 14,422.00 | | Nov. 30, 1907. |
| Standish, Mass.: 1 ordnance storehouse | .....do | 8,485.00 | ..... | ..... | ..... | 8,485.00 | 8,485.00 | Sept. 30, 1907. |
| Strong, Mass.: Post exchange and gymnasium | M. P. E. | 18,330.00 | a1,491.00 | a1,395.00 | a711.00 | 21,927.00 | 21,927.00 | Aug. 31, 1907. |
| Totten, N. Y.: | | | | | | | | |
| Quartermaster's stable | B. & Q. | 10,996.00 | 253.00 | ..... | 112.00 | 11,361.00 | 97,007.00 | Jan 17, 1908. |
| 1 double Coast Artillery barrack | M. P. | 71,571.00 | 7,678.00 | 4,905.00 | 1,492.00 | 85,646.00 | | Feb. 20, 1908. |
| Walter Reed General Hospital: Hospital building | A. G. Hospital, Washington, D. C. | 154,843.00 | a14,370.00 | a18,350.00 | a4,400.00 | 191,963.00 | 191,963.00 | Nearly completed. |
| Whipple Barracks, Ariz.: Post exchange and gymnasium. | M. P. E. | 27,440.00 | a1,950.00 | a2,185.00 | a600.00 | 32,175.00 | 32,175.00 | June 30, 1908. |
| Wood, N. Y.: | | | | | | | | |
| 1 Signal Corps barrack | M. P. | 44,400.00 | 3,858.00 | 3,387.00 | 1,076.00 | 52,721.00 | 4,380.00 | Nov. 10, 1907. |
| Post exchange and gymnasium | M. P. E. | 14,900.00 | a1,157.00 | a1,152.00 | a847.00 | 18,056.00 | | Dec. 31, 1907. |
| Stable and carriage shed | B. & Q. | 3,400.00 | 203.00 | ..... | ..... | 3,603.00 | | Do. |
| Worden, Wash.: 1 administration building | .....do | 15,600.00 | 1,550.00 | 2,596.00 | 800.00 | 20,546.00 | 20,546.00 | Feb. 29, 1908. |
| Yellowstone, Wyo.: 1 cavalry stable | .....do | 15,379.00 | 1,350.00 | ..... | ..... | 16,729.00 | 16,729.00 | Nov. 30, 1907. |
| Total | | 3,456,114.00 | 252,938.00 | 103,628.00 | 28,990.00 | 3,841,670.00 | 3,841,670.00 | |

a Chargeable to same appropriation as construction proper.

BUILDING MATERIAL.

The high prices of lumber for building purposes, and the increasing general use and improved methods of concrete construction have decided this office, with approval of the Secretary of War, to adopt reinforced concrete in the construction of certain classes of buildings for the army.

At Fort Howard, Md., contracts have recently been awarded for a single coast artillery barrack and two double noncommissioned officers' quarters, of reinforced concrete throughout, with hollow walls, double floors, and ceilings, and as nearly fireproof as it is possible to make such buildings. Practically the only wood in the barracks will be the doors and windows. It is expected the completion of these buildings will confirm the opinion of this office, formed after careful investigation, that this construction will not only reduce the cost of barracks, but also provide a building in every way more suitable than any heretofore built for the purpose.

COST OF CONSTRUCTION.

The constantly increasing cost of building material and labor, and the high grade of work exacted by the department's specifications have combined to increase the cost of buildings until the limit of reasonable price seems frequently to be exceeded. To bring and keep this cost down without detracting from the quality or permanency of the buildings has been a constant effort and study. To this end the specifications for lumber have been changed to conform to commercial sizes and permit the use of grades reasonably suitable for the work, and in brickwork the good, hard, common varieties are insisted upon instead of the more expensive pressed ones.

Congress has placed the specific cost limit of $15,000 for a brigadier-general's quarters, at seacoast defense posts, $12,000 for a field officer's and $9,000 for a company officer's, including construction of the building and installation of plumbing, heating apparatus, and lighting fixtures.

This limit is considerably below the actual cost of this class of buildings heretofore erected, and has necessitated the preparation of new plans and specifications. Plans for separate quarters for field officers and company officers have been prepared, and by careful attention to details, the omission of certain portions of the basement and the modification of interior arrangement, what is believed to be a satisfactory result has been obtained without reducing the accommodations below the reasonable requirements of the several grades, and at the same time a separate building for each officer, regardless of his rank, has been provided.

While Congress has not established this limit on quarters at posts for the mobile army, it is the intention to apply the rule to them and the necessary plans are being prepared to this end. A limitation upon the cost of quarters is in accordance with correct business principles, the amounts can be made to suffice, and it is fair to make the rule generally applicable.

### ARMY SUPPLY DEPOT, FORT MASON, SAN FRANCISCO, CAL.

After much study and preliminary examination, plans and specifications for reinforced concrete wharves, sheds, and seawall, at the above depot, have been completed and approved, contract made for the construction, including dredging, at a total cost of $1,078,000, and the work begun. Plans are also completed for the necessary storehouses and bids will be invited for their construction as soon as work on the wharves has progressed sufficiently to justify it.

The wharves will accommodate four vessels of 30 feet draft at one time, and when completed will be of inestimable benefit in the increased facilities for handling, storing, and shipping supplies for the army on the Pacific coast, and in Hawaii and the Philippine Islands, and in the accommodations for the Pacific transport service.

This is one of the most important construction undertakings the department has been called upon to carry out and the plans are considered to represent the latest and best type of permanent wharf construction.

### HEAVY FURNITURE.

The heavy permanent furniture authorized for officers' quarters and the public rooms of officers' messes is now being manufactured under contract, and quarters at posts in the United States and Alaska are being equipped and the entire contract should be completed on or before January 1, 1909. An allotment of funds was made the Philippines Division from which to purchase there to meet requirements. The furniture to be supplied includes dining tables and chairs, a sideboard, and library desk of a plain and serviceable, but neat design, made of solid mahogany, which it is believed can not fail to be favorably received by the army generally.

Plans and specifications are now being prepared for additional articles determined upon as necessary, and approved by the Secretary of War, contract for the manufacture of which will, it is expected, be made early in 1909.

### SUPPLIES.

*Forage.*—There were purchased during the fiscal year 266,351,448 pounds of forage (including bedding) at a cost of $2,941,880.32. This was 32,903,979 pounds more in quantity and $677,312.17 more in cost than for the preceding fiscal year.

*Fuel and mineral oil.*—Purchases of fuel of all kinds, other than for the transports and other vessels, and mineral oil for lighting, aggregated, during the fiscal year, $2,024,079.21. This is $79,267.61 in excess of like expenditures for the preceding fiscal year.

*Fuel for vessels.*—Purchases of fuel for transports, harbor boats, mine planters, etc., aggregated, during the fiscal year, $990,947.67. This is an increase of $341,705.01 over the amount expended for these purposes during the preceding fiscal year.

*Miscellaneous supplies.*—The total cost of miscellaneous supplies purchased, including army ranges, cooking and heating stoves, laundry outfits, safes, field desks, lamps, kitchen utensils, tableware, paulins, typewriters, coffins, etc., was $141,838.52.

## ANIMALS AND MEANS OF TRANSPORTATION.

Following is a statement of purchases, remounts, draft and pack animals, vehicles, and articles pertaining to transportation, viz:

| | Number. | Total cost. | Average cost. |
|---|---|---|---|
| Cavalry horses | 1,646 | $224,206.63 | $136.20 |
| Riding horses | 79 | 12,399.63 | 156.90 |
| Artillery horses | 418 | 68,142.40 | 163.00 |
| Draft horses | 73 | 17,216.00 | 236.60 |
| Bell horses | 2 | 165.00 | 82.50 |
| Draft mules | 557 | 93,842.26 | 168.40 |
| Pack mules | 797 | 116,173.00 | 145.70 |
| Saddle mules | 8 | 1,336.00 | 167.05 |
| Dogs (for Alaska) | 69 | 2,852.00 | 41.31 |
| Automobiles | 4 | 13,000.00 | 3,250.00 |
| Escort wagons | 226 | 23,282.16 | 103.02 |
| Dougherty wagons | 88 | 24,270.00 | 275.79 |
| Delivery wagons | 78 | 10,093.00 | 129.40 |
| Station wagons | 30 | 11,552.00 | 384.06 |
| Wagonettes | 22 | 8,601.25 | 390.96 |
| Water wagons | 13 | 4,064.75 | 312.67 |
| Ambulances (1800 pattern) | 82 | 19,782.00 | 242.46 |
| Express wagons | 1 | 165.00 | ..... |
| Miscellaneous wagons | 69 | 11,687.69 | 169.39 |
| Dump carts | 86 | 4,101.25 | 47.69 |
| Sanitary wagons | 9 | 1,766.00 | 196.22 |
| Hand carts | 90 | 1,638.21 | 18.20 |
| Trucks: | | | |
| 2-horse | 4 | 1,218.00 | 304.50 |
| 4-horse | 8 | 4,330.00 | 541.25 |
| Sleighs | 4 | 141.00 | 35.25 |
| Bicycles | 5 | 168.00 | 33.60 |
| Harness: | | | |
| Single sets | 1,632 | 32,721.68 | 20.05 |
| Double sets | 299 | 16,646.48 | 55.67 |
| Cart, single sets | 50 | 996.98 | 19.94 |
| Dog | 159 | 318.00 | 2.00 |
| Riding saddles | 111 | 1,758.67 | 15.84 |
| Pack saddles (special devices for Signal Corps) | 21 | 1,260.00 | 60.00 |
| Sleds, dog | 27 | 840.00 | 31.11 |
| Total | ..... | 730,735.04 | ..... |

Comparison with last year's report shows a general decrease in the prices paid for animals and both increases and decreases in manufactured articles purchased.

During the fiscal year 1,905 animals were condemned and sold and 760 died, a total of 2,665 animals. There remained on hand on June 30, 1908, cavalry horses, 13,411; artillery horses, 3,541; draft horses, 2,513; mules, 10,398, a total of 29,863 animals.

*Issues to the militia.*—Miscellaneous supplies to the value of $15,192.45 were issued to the organized militia during the fiscal year under authority of statutes providing for such issues. The department's appropriations are reimbursed this cost from the militia appropriations, except $1,544.87 of gratuitous issue, under provision of law to the organized militia of the District of Columbia.

### REMOUNT SERVICE.

In the act approved May 11, 1908, Congress gave authority to establish a remount service, and by General Orders, No. 59, War Department, 1908, the abandoned military reservation of Fort Reno, Okla., was turned over to the department for use as a remount depot to be conducted on the plan outlined in last year's annual report. A competent officer has been placed in charge of the depot and about 200 young horses have been purchased and are now being handled

and prepared for issue to troops. While it is early to speak with absolute certainty, this office is confident of the complete success of this system of supplying remounts. Certainly every indication now points to success. To complete the plan, however, there should be established additional remount depots and the whole country divided into districts, as was explained in the outline of the system published in last year's annual report.

## TRANSPORTATION.

*Statement showing transportation furnished during fiscal year 1908, exclusive of the Philippine Islands and of the transport service.*

| | Railroad. | Water. | Wagon. | Stage. | Express. | Government vessels.[a] | Total. |
|---|---|---|---|---|---|---|---|
| Passengers: | | | | | | | |
| Officers | 6,756 | 706 | 10 | 29 | ..... | 81,543 | 89,044 |
| Enlisted men | 119,781 | 10,488 | 149 | 522 | ..... | 1,354,457 | 1,485,397 |
| Total | 126,537 | 11,194 | 159 | 551 | ..... | 1,436,000 | 1,574,441 |
| Animals: | | | | | | | |
| Horses | 7,725 | 239 | ..... | ..... | ..... | 161 | 8,125 |
| Mules | 3,649 | 655 | ..... | ..... | ..... | 1,234 | 5,538 |
| Total | 11,374 | 894 | ..... | ..... | ..... | 1,395 | 13,663 |
| Stores (tons): | | | | | | | |
| Quartermaster | 41,420 | 59,723 | 12,445 | ..... | 280 | 43,845 | 157,713 |
| Subsistence | 25,105 | 12,414 | 8,426 | ..... | 606 | 11,694 | 58,245 |
| Ordnance | 33,035 | 9,884 | 4,085 | ..... | 79 | 10,427 | 57,510 |
| Medical | 1,360 | 508 | 620 | ..... | 17 | 277 | 2,782 |
| Signal | 2,903 | 1,446 | 269 | ..... | 65 | 1,665 | 6,348 |
| Engineer | 44 | 12 | ..... | ..... | 9 | ..... | 65 |
| Miscellaneous | 22,491 | 7,263 | 23,707 | ..... | 50 | 19,068 | 72,579 |
| Total | 126,358 | 91,250 | 49,552 | ..... | 1,106 | 86,976 | 355,242 |
| Funds | $120.00 | ..... | ..... | ..... | $4,471,308.77 | ..... | $4,471,428.77 |
| Remains | 69 | 6 | ..... | ..... | 46 | 58 | 179 |

[a] Includes all passengers carried on government ferryboats plying between military posts and adjacent cities.

Compared with last year, there was an increase of 114,835 passengers, a decrease of 7,120 animals, and an increase of 126,556 tons of supplies transported. Shipments of supplies for each department, except the Signal Corps, show decided increases over last fiscal year. Shipments for the Signal Corps declined 608 tons. Express shipments for all departments show marked increases, the total increase of such shipments over those of the fiscal year 1907 being 940 tons. During the fiscal year 1907 express shipments were 166 tons, while during the fiscal year 1908 they were 1,106 tons—nearly seven times as much in the latter as in the former year. This office is unable to convince itself that any good reason exists for this marked increase of express shipments. No great emergencies were to be met, nor have any unusual demands arisen, so that it would appear the increase must be due to neglect to call for supplies required in time to allow their shipment by freight, and generally to disregard of paragraph 1150, Army Regulations, 1908. This office can exercise little or no control over shipments for the line of the army or other staff departments. When called upon by proper authority, officers of the Quartermaster's Department are required to ship supplies, etc., as requested.

*In the Philippine Islands.*—Transportation was furnished, exclusive of the interisland transport service, 27,486 persons, 1,370 animals, $1,408,120.39 in funds, 75,530 tons of supplies, and 81 remains.

*Shipments in deep-sea vessels.*—There were shipped in American bottoms to Philippine, Cuban, Porto Rican, and other ports 25,137,180 tons of supplies and material and 1,143,345 board feet of lumber and 223 passengers, at a cost of $290,013.23; in foreign bottoms to Manila and other ports, 23,755,524 tons of supplies, etc., and 6,473,564 feet of lumber, at a cost of $249,572.63; total, $539,585.86.

### BAGGAGE SHIPMENTS.

It is recommended that Congress be requested to authorize shipments of baggage in excess of regulation change of station allowances, on government bill of lading at the owner's cost, where the excess is shipped with the allowance. This can be accomplished by inserting after the word "crating" in the appropriation "Transportation of the army and its supplies," the following: "That hereafter baggage in excess of regulation change of station allowances may be shipped with such allowances, and reimbursement will be collected for transportation charges on such excess."

Present interpretations of the law prohibit shipment of excesses over regulation change of station allowances, on government bill of lading, or payment by the shipper of the charges and obtaining reimbursement from public funds. Even were the latter course permissible it could not be followed when any part of the shipment was over a land-grant road, as individuals could not claim, or be given, the land-grant rates. The regulation change of station allowance and the excess may, and frequently do, make a carload and if shipped on one bill of lading would be given carload rates. Divided and shipped partly on government and partly on private bill of lading, less than carload rates are collected on each part, entailing a useless expense to both the Government and private shipper. This, especially in long hauls, amounts to considerable. It is thought, too, in view of the fact that owners will pay transportation charges on the excess, that more shipments will be made at owners' risk, still further reducing transportation charges on shipments of change of station allowances.

### ARMY TRANSPORT SERVICE

The stations of the vessels of the Army Transport Service remain the same as last fiscal year, with the exception that the *Warren* has been transferred to the Philippine Inter-Island Service.

Every vessel of both the Atlantic and Pacific fleets has been in active service at some period of the year except the *Meade.*

*Sailings.*—An uninterrupted monthly service has been maintained during the year between the United States and the Philippines by the *Buford, Logan, Sherman,* and *Thomas;* a semimonthly service between Newport News, Va., and Habana, Cuba, by the *Kilpatrick* and *Sumner.* The *Crook* has supplemented the Pacific service by three round voyages to the Philippines and was also utilized to accomplish the periodical interchange of troops stationed in Alaska, sailing from San Francisco, Cal., and returning to Seattle, Wash.; the *Warren* was placed in commission to carry troops and cargo to Manila

in August, 1907, and was held there for use in the inter-island service. The *Dix* made three sailings from Seattle to Manila during the year.

The *Ingalls* was placed in commission and made two round trips from the Jamestown Exposition to Annapolis, Md., in October and November, 1907, carrying the Twenty-third Infantry to and from target practice.

The *McClellan* being no longer required in the Philippines was returned to the United States via the Suez route.

*Repairs.*—San Francisco: Upon the return of each trans-Pacific transport to the home port a board is appointed to carefully examine into the repairs necessary before another voyage, and the work is done under competition after approval of the War Department. Repairs have averaged $7,722 per voyage during the fiscal year, but the *Sherman*, *Thomas*, and *Buford* are in need of overhauling as soon as funds will permit and the ships can be withdrawn without detriment to the service.

The overhauling of the *Sheridan* occasioned by the grounding of the ship on Barbers Point, Hawaiian Islands, in August, 1906, cost $367,142.73, and the ship resumed regular service beginning May 5, 1908. The *Logan*, after over five years' continuous service, is being overhauled at a cost of approximately $285,000.

Seattle: Ordinary repairs to the *Dix* have amounted to $4,111 per voyage, while the *Burnside* has been kept in condition to repair or lay cable, whenever required, at a cost of $7,804.37 for repairs during the fiscal year.

Newport News, Va.: As the schedule provides only four or five lay days at the home port, only emergency repairs can be accomplished between voyages, so that it is necessary to withdraw the active transport occasionally for more extensive repairs. The vessels out of commission have been maintained in condition for such service as may be required at the following cost: *Kilpatrick*, $45,485.25; *Sumner*, $29,692; *Meade*, $59.80; *Ingalls*, $1,584.01.

*Service for other departments.*—The transports have carried during the year for other executive departments and for the insular government of the Philippine Islands passengers and freight entitled to transportation at public expense, the value of which, at the public commercial rates, would be as follows: Navy Department, $275,528.08; Post-Office Department, $120,416.64 (including 477,089 pounds mail matter); Philippine government, $162,252.75; Treasury and other departments, $160.15; total, $558,357.62.

*Work of the transports.*—Following is a brief statement of the work of the transports during the fiscal year:

PASSENGERS.

| Between— | No. sailings. | Officers. | Enlisted men. | Civilians. | Total. |
|---|---|---|---|---|---|
| San Francisco and Philippines | 17 | 507 | 9,972 | 1,345 | 11,714 |
| Manila and San Francisco | 16 | 562 | 10,131 | 1,950 | 12,643 |
| Seattle and Manila | 3 | 1 | 36 | 9 | 46 |
| Manila and Seattle | 2 | 1 | 2 | 7 | 10 |
| Manila and New York | 1 | 22 | 3 | 42 | 67 |
| Newport News and Habana | 24 | 209 | 3,312 | 478 | 3,999 |
| Habana and Newport News | 24 | 227 | 2,210 | 605 | 3,042 |
| Inter-island ports | ..... | 330 | 7,665 | 551 | 8,546 |
| Alaska and return | 1 | 37 | 947 | 124 | 1,108 |
| Other ports | ..... | 270 | 2,811 | 993 | 4,074 |
| Total | ..... | 2,256 | 33,889 | 6,104 | 45,249 |

CARGO.

| Between— | Animals. | Freight. | Lumber. | Remains. | Mail. | Money. |
|---|---|---|---|---|---|---|
| | | *Tons.* | *Feet.* | | *Pounds.* | *Dollars or pesos.* |
| San Francisco and Philippines | | 27,487 | 12,516 | 1 | 268,832 | 23,030,000.00 |
| Manila and San Francisco | | 11,355 | | 82 | 52,619 | 11,439,301.59 |
| Seattle and Manila | 1,275 | 12,491 | 817,318 | | | |
| Manila and Seattle | | 10 | | | | |
| Manila and New York | | 516 | | 54 | | |
| Newport News and Habana | 11 | 46,740 | | | | |
| Habana and Newport News | 5 | 1,474 | | 33 | | |
| Inter-island ports | 365 | 8,971 | | | 5,920 | 1,375.47 |
| Alaska and return | | 1,477 | | | 40 | 225,000.00 |
| Other ports | 19 | 3,466 | 200,407 | 13 | 149,678 | 102,168.69 |
| Total | 1,675 | 113,987 | 1,030,241 | 183 | 477,089 | 34,797,845.75 |

The earnings of the transports during the year for the above service, based upon the lowest rates offered for similar service by commercial lines, have been: For passengers, $2,695, 756.04; for freight, $996,572.37; total, $3,692,328.41.

At public commercial rates the earnings would amount to: For passengers, $2,701,061.29; for freight, $1,058,307; total, $3,759,368.29.

No credit has been taken for the transportation of families of officers, soldiers, and employees, or other persons not entitled to public transportation payable from an appropriation of the United States Government; nor persons, animals, supplies, and money carried for the insular government of the Philippines or Cuba; nor for coal transported for use of army transports. The value of such gratuitous service during the year, based upon the lowest rates offered, is: For passengers, $535,472.98; for freight, $74,571.45; total, $610,044.43. At regular commercial rates, however, such service was worth: For passengers, $545,862.98; for freight, $77,511.45; total, $623,374.43.

The expenditures for the operation and maintenance of the transports and the expenditures connected with the conduct of the army transport service at the various ports are as follows:

| | In commission. | Out of commission. | Total. |
|---|---|---|---|
| Wages of officers and crews | $625,426.37 | $119,218.92 | $744,645.29 |
| Repairs to transports | 196,607.31 | 499,773.15 | 696,380.46 |
| Coal | 480,461.69 | 14,942.88 | 495,404.57 |
| Deck, engine, stewards, and subsistence supplies | 606,350.08 | 70,608.84 | 676,958.92 |
| Miscellaneous expenses, including stevedoring, pilotage, laundry, towage, etc. | 178,896.51 | 8,604.39 | 187,500.90 |
| Total | 2,087,741.96 | 713,148.18 | 2,800,890.14 |
| Shore expenses, including proportionate salaries and commutation of officers' quarters, wages of employees, rent of offices, wharves, warehouses, etc.: | | | |
| San Francisco | | $55,519.18 | |
| Seattle and Tacoma | | 12,820.36 | |
| New York | | 15,934.39 | |
| Newport News | | 13,774.36 | |
| Honolulu | | 4,900.04 | |
| Nagasaki | | 10,445.68 | |
| Manila | | 8,299.24 | |
| Habana | | 18,496.48 | |
| Total expenditures on account of transport service | | | 140,189.73 |
| Grand total | | | 2,941,079.87 |
| Included in these expenditures is the cost of operating the Burnside while engaged in cable work for the Signal Corps of the Army, the total of which was | | | 121,938.13 |
| Net cost of transport service | | | 2,819,141.69 |

In view of the fact that the service by the *Burnside* was not performed in the interests of the Quartermaster's Department, the expenditure therefor should be deducted, leaving the cost to the Government on account of transportation of troops, supplies, etc., and maintenance of transports, both active and inactive, during the fiscal year, $2,819,141.69.

*Earnings and expenses.*

| | Lowest commercial rates obtainable. | Public commercial rates. |
|---|---|---|
| Earnings of transports during the fiscal year | $3,692,328.41 | $3,750,368.29 |
| Expenses of operation and maintenance during same period | 2,819,141.69 | 2,819,141.69 |
| Saving to the Government by the transports over similar service by commercial vessels | 873,186.71 | 940,227.69 |

NOTE.—No proposals were received for transportation of passengers and freight by commercial lines from San Francisco to Manila, which accounts for the small difference between lowest rates offered and regular commercial tariff.

*Chartered service.*—The steamer *Persiana* was chartered in October, 1907, and the steamer *Framfield* in December, 1907, to carry to Cuba certain forage which had accumulated at Newport News in excess of the capacity of the transport in regular operation. These ships transported an aggregate of 11,123 cubic tons of supplies at a total cost of $16,565.78, whereas the cost of the same service at normal rates would have required an expenditure of $53,390.40.

THE PHILIPPINE INTER-ISLAND SERVICE.

*Owned vessels.*—Five regular transports have been maintained and operated during the year in the various ports in the Philippine Islands, viz, the *Liscum*, cable ship and general carrier, *McClellan* (until returned to the United States in February, 1908), *Seward*, *Warren*, and *Wright*, passenger, freight, and refrigerator transports. The *Crook*, *Buford*, *Sherman*, and *Thomas* have also made several trips to these ports when such course was deemed expedient in the interchange of outgoing and returning organizations, and the *Dix* likewise, in order to economically dispose of animals, lumber, and general cargo brought from the United States. Seventy-eight voyages, aggregating 1,309 running days, were made by the owned transports of the Philippine inter-island service, carrying 1,050 officers, 13,033 enlisted men, and 773 civilians entitled to government transportation; also 77 remains, 528 animals, 50,860 cubic tons freight, 2,742,626 feet lumber, 1,321,131.19 dollars or pesos in money, the value of which at commercial rates was $604,249.45. There were also carried 6,370 passengers, 1,371 tons freight, 190,185 pounds mail, and 8,341.63 dollars or pesos in money, for which no credit was taken. The expenses of this service aggregated a total of $434,835.35.

After allowing the proper proportion for shore expenses chargeable to this service ($146,230.06), the net earnings of the five transports at regular commercial rates was $23,184.04.

*Chartered vessels.*—There have been chartered as dispatch boats and to supplement the owned service, 5 steamships, which have in all made 131 voyages to island ports, carrying 793 officers, 1,710 enlisted

men, and 74 civilians entitled to government transportation; also 1,230 tons freight, 5,000 feet lumber, 83 animals, and $60,441.43 in currency, the value of which at commercial rates was $25,820.86.

There was also transported 1,190 passengers, 19 tons freight, and 17,062 pounds mail matter, for which no credit was taken. The expense of this service was $102,994.83.

After charging this service with a fair proportion of shore expenses at Manilla ($33,411.98), the net loss connected with the several chartered transports was $110,585.95.

*Recapitulation.*

| | Credits. | Expenditures. |
|---|---|---|
| Pacific and Atlantic service | $3,692,328.41 | $2,819,141.60 |
| Philippine owned service | 604,249.45 | 581,065.41 |
| Philippine chartered service | 25,820.86 | 136,406.81 |
| | 4,322,398.72 | 3,536,613.91 |
| Net earnings for entire transport service | | 785,784.81 |

PHILIPPINE HARBOR SERVICE.

The requirements of the harbor service at Manila and other Philippine Island ports have been adequately met during the year by the operation of 56 owned launches and 160 lighters, lorchas, cascoes, and other small boats, at a total cost of $271,151.06, including the proper proportion of the expenses of the shore establishment.

The department has constructed for this service during the year four 90-foot launches and nineteen smaller craft, at a total cost of $81,149.09. There was realized during the same period from the sale of condemned and unserviceable means of water transportation the sum of $6,141.17.

There was also expended for the charter of launches, lighters, lorchas, cascoes, and other small boats an aggregate of $47,354.51.

HARBOR BOAT SERVICE.

*Owned service.*—The department has operated during the fiscal year in the various harbors along the Atlantic and Pacific coasts and Gulf of Mexico 89 owned vessels engaged in quartermasters', artillery, and signal work, at a total expenditure for wages of officers and crews, fuel, supplies, etc., of $807,596.61.

*Statement showing harbor boats in service during the fiscal year 1908, with class and stations.*

| Name. | Station. |
|---|---|
| MINE PLANTERS. | |
| Gen'l. Henry J. Hunt | Fort Totten, N. Y. |
| Gen'l. Henry Know | Do. |
| Col. Geo. Armistead | Do. |
| Maj. Samuel Ringgold | Fort Monroe, Va. |
| CABLE STEAMER. | |
| Cyrus W. Field | Atlantic coast. |
| FERRY BOAT. | |
| *General Hancock* | Governors Island, New York Harbor. |

*Statement showing harbor boats in service during the fiscal year 1908, with class and stations*—Continued.

| Name. | Station. |
|---|---|
| FREIGHT AND PASSENGER STEAMERS. | |
| Gen. Nathaniel Greene | Fort Trumbull, Conn. |
| Gen. Thos. S. Jesup | Boston, Mass. |
| Gen Mifflin | San Francisco, Cal. |
| Gen. Jos. E. Johnston | New York City. |
| Gen. Meigs | Do. |
| Gen. McDowell | San Francisco, Cal. |
| Gen. Robert Swartwout | Fort Adams, R. I. |
| Gen. Timothy Pickering | Fort De Soto, Fla. |
| Gen. R. N. Batchelder | Fort Morgan, Ala. |
| Henry Wilson | Fort Williams, Me. |
| Sprigg Carroll | Fort Howard, Md. |
| Maj. Evan Thomas | Fort Worden, Wash. |
| Lieut. Geo. M. Harris | San Francisco, Cal. |
| Cartwright | Seattle, Wash. |
| Capt. F. W. Morrison | Fort Banks, Mass. |
| Capt. C. W. Rowell | Fort H. G. Wright, N. Y. |
| Capt. A. M. Wetherill | Fort Hamilton, N. Y. |
| Gen. French | Fort Moultrie, S. C. |
| Genl. Barry | Fort Slocum, N. Y. |
| Gen. Howe | Fort Dupont, Del. |
| Maj. Guy Howard | Fort Stevens, Oreg. |
| Maj. Forse | Fort Williams, Me. |
| Lieut. Chas. V. Donaldson | Fort Liscum, Alaska. |
| Gen. Jeff. C. Davis | Fort Gibbon, Alaska. |
| TUGS. | |
| Reno | Fort Monroe, Va. |
| Lieut. Alonzo H. Cushing | Fort Washington, Md. |
| Capt. Reilly | Fort Constitution, N. H. |
| Capt. Drum | Fort Adams, R. I. |
| Peterson | Fort Seward, Alaska. |
| Gibbon | Fort Screven, Ga. |
| Col. Wickoff | Governors Island, New York Harbor. |
| Castle | Fort Trumbull, Conn. |
| Lieut. Maxwell W. Keys | Fort St. Michael, Alaska. |
| Lieut. Hayden Y. Grubbs | Fort Constitution, N. H. |
| Weitzel | Fort Williams, Me. |
| Alexander | Presidio of San Francisco. |
| STEAM LIGHTERS. | |
| Capt. Godfrey | Fort Totten, N. Y. |
| Williams | New York City. |
| Canby | Do. |
| Poe | Fort Barrancas, Fla. |
| STEAM LAUNCHES. | |
| Lieut. A. W. Drew | Fort McKinley, Me. |
| Capt. J. C. Gregg | Fort Howard, Md. |
| Lieut. W. H. Lee | Fort Moultrie, S. C. |
| Lieut. W. E. Shipp | Fort De Soto, Fla. |
| Lieut. J. G. Ord | Fort Trumbull, Conn. |
| Capt. T. W. Connell | Fort Hamilton, N. Y. |
| Capt. B. M. Hartshorne | Fort Rodman, Mass. |
| Lieut. E. A. Bumpus | Fort Banks, Mass. |
| Gen. De Russy | Fort Rosecrans, Cal. |
| Col. Elder | Fort Fremont, S. C. |
| Lieut. Bernard | Fort Washington, Md. |
| Lieut. L. H. Lewis | Governors Island, N. Y. H. |
| Lieut. Boutelle | Boston, Mass. |
| Capt. Page | Fort Barrancas, Fla. |
| Col. Mitchell | Fort Andrews, Mass. |
| Lancaster | Jackson Barracks, La. |
| Mansfield | Fort Trumbull, Conn. |
| Capt. Michie | Fort Liscum, Alaska. |
| Mercedes | Washington Barracks, D. C. |
| Capt. Watson | West Point, N. Y. |
| Capt. De Hart | Fort Warren, Mass. |
| Lieut. Crosby | Fort Mott, N. J. |
| Lieut. Elliott | Fort Ward, Wash. |
| Lieut. Haslett | Fort Schuyler, N. Y. |
| Capt. Smead | Fort McDowell, Cal. |
| Col. Hamilton | Fort Constitution, N. H. |
| Col. Ramsey | Fort Williams, Me. |
| Capron | Washington Barracks, D. C. |
| M. G. Krayenbuhl | Fort Monroe, Va. |
| Pleasonton | Fort Morgan, Ala. |
| Lieut. Burnham | Key West Barracks, Fla. |
| Haskell | Seattle, Wash. |

*Statement showing harbor boats in service during the fiscal year 1908, with class and stations*—Continued.

| Name. | Station. |
|---|---|
| GASOLINE LAUNCHES. | |
| Florence | Boston, Mass. |
| Alcatraz | Alcatraz Island, Cal. |
| No name | Fort De Soto, Fla. |
| Lieut. Edmund Benchley | Fort Gibbon, Alaska. |
| Lieut. Henry B. McCorkle | Do. |
| Lieut. Wm. A. Sater | Fort Adams, R. I. |
| ELECTRIC LAUNCHES. | |
| Lieut. Wansboro | Fort Totten, N. Y. |
| West Point | West Point, N. Y. |
| Tender | For General Knox. |
| Do | For Colonel Armistead. |
| Do | For Major Ringgold. |

*Chartered service.*—To supplement the above service, chartered vessels were in operation in the district of Charleston between Wilmington and Fort Caswell, N. C., at a cost of $7,825; in the district of Savannah, between Beaufort and Fort Fremont, S. C., at a cost of $5,220.50; in the district of Narragansett Bay, between Newport and Fort Greble, R. I., at a cost of $12,810. Artillery service was also rendered by these vessels whenever required. The entire cost of this chartered service, including the hire of substitute vessels for short periods to replace owned vessels undergoing repairs, and of vessels for towing targets, vessel tracking, subcaliber practice, and like purposes for the coast artillery, which could not be performed by the other vessels of the service, amounted to $49,152.85 during the fiscal year.

*Purchase of vessels.*—The tug *Dallas* was purchased for $6,000, renamed the *Lieut. Hayden Y. Grubbs*, and assigned to the artillery district of Portsmouth, with station at Fort Constitution, N. H., to replace the *Captain Reilly*, which was condemned and ordered sold. To meet the requirements for a larger vessel at Fort Liscum, Alaska, the steamer *Valdez* was purchased at a cost of $15,000, and is now called the *Lieut. Chas. V. Donaldson.* The gasoline launch *Fawnia* was purchased for the use of the artillery district of Narragansett Bay, with station at Fort Adams, R. I., at a cost of $3,300, and has been renamed the *Lieut. Wm. A. Sater.*

*Sale of vessels.*—The *Weitzel*, in service at Fort Williams, Me., was sold for $5,751, the *Captain Michie*, at Fort Liscum, Alaska, for $245, a gasoline launch at Fort Washington, Md., for $70, all being unsuitable for the requirements of the department.

CONSTRUCTION WORK.

Plans and specifications have been prepared and contracts awarded during the fiscal year for the construction of the following vessels, required to provide suitable means of water transportation for the service:

| Class of vessel. | No. | Length. | Total cost |
|---|---|---|---|
| Twin-screw steel mine planters | 4 | 165 | $674,662.72 |
| Twin-screw steel cable steamer | 1 | 165 | 194,000.00 |
| Stern-wheel steel river steamer | 1 | 120 | 37,675.00 |
| Single-screw steel tugs | 10 | 98 | 587,375.00 |
| Gasoline wooden launches | 4 | 90 | 52,800.00 |
| Junction box launches | 33 | 32 | 89,690.00 |
| *Total* | 53 | | 1,635,202.72 |

THE NEED FOR TRANSPORTS.

The owned transport vessels now operated by this department are sufficient for the needs of the service under existing conditions, but some of them are approaching the age when it will no longer be economical to keep them in that degree of seaworthiness which is an imperative requisite to safeguarding the lives of their multitude of passengers. The loss at sea of a troop-ladened transport would be a calamity too terrible to contemplate with equanimity. To maintain the army transport service at its present high standard of efficiency and insure continued safety of operation, the department should have authority to build one new transport each year until the present fleet is replaced by new vessels, especially designed and equipped for troop transports. As the old vessels are replaced they should be disposed of, or if fit, kept in reserve for use in emergencies.

*War needs.*—The country's lack of vessels suitable to meet the army's need of transports for a military expedition of any magnitude, which would necessitate a movement of troops oversea is of public knowledge. As it would fall upon this department to find a way to meet a demand for such a movement, any plan that promises to encourage the building of vessels suitable for transports is of interest to it. The opinion has already been expressed (Quartermaster-General's annual report for 1906, p. 28) that this department might advantageously be given authority of law, together with an adequate appropriation, to take options for the charter of American vessels suitable for transports, paying therefor a reasonable yearly rate, fixing the charter price if called into service, and giving the department first right to the services of such vessels when needed.

It was then and still is the opinion that this would encourage the building of ships adapted to transport uses and place this department in position to command their services. The law could prescribe in what trade these vessels should be engaged in order to promote our trade with foreign countries, and whether the rate to be paid for options should be a fixed sum per month, or year, a rate per ton, or some other of the different plans considered in connection with the encouragement of American shipping. The Secretary of War should be empowered to require that vessels to be built with the object of being so optionally chartered to the Government should comply with certain requirements in the way of construction, speed, equipment, etc., to render them readily convertible into transports. This office has these requirements well worked out, and regulations thereon could be established with practically no delay.

Another plan has been suggested whereby the Government would build transport vessels to such number as would insure transportation being available for a reasonably large expeditionary force and charter them for foreign trade under proper conditions as to payments, field of operations, nationality of crews, etc. That plan could also be put into effect by this department with little delay, were it authorized by law and funds appropriated. Any plan of encouragement to American shipping which will place within reach of the department suitable vessels for transport duty in military operations involving over-sea movements will be viewed with satisfaction and diminish the existing feeling of unpreparedness. An excellent discussion of the war need of transport vessels will be found in the report published in Senate document No. 225, Sixtieth Congress, first session, beginning on page 41, *to which attention* is invited.

## CLOTHING AND EQUIPAGE.

Appropriations for the supply of clothing and camp and garrison equipage for the fiscal year 1908 were $3,859,232.49; reimbursements for issues to the militia, clothing drawn by enlisted men in excess of allowances, sales to officers, other departments of the Government, etc., $1,095,179.68; total, $4,954,412.17; remittances to officers for expenditures chargeable to this appropriation, and treasury settlements were $4,317,138.86; balance in Treasury June 30, 1908, $637,273.31, which will be required to pay indebtedness incurred but not settled prior to June 30, 1908, the close of the fiscal year.

For the current fiscal year a needed increase in this appropriation is available, which will enable the department to make issues to the militia more promptly and to add to the reserve stock.

*Issues to the militia.*—There were issued during the fiscal year to the governors of the several States and Territories and to the commanding general of the District of Columbia militia, under the laws providing for new arms and equipments for the organized militia, clothing and equipage valued at $464,090.77, for which appropriations of the Quartermaster's Department have been or will be reimbursed.

*Sales to the militia.*—There were sold during the fiscal year by special authority of the Secretary of War, under the law, to the governors of the several States and Territories, clothing and equipage supplies to the value of $186,107.51, including cost of packing preparatory to shipment. This is an increase of $146,335.41 over last fiscal year.

*Gratuitous issues to the District of Columbia militia.*—There were issued to the commanding general of the District of Columbia militia, by direction of the Secretary of War, during the fiscal year, under the provisions of law, for which the department will not be reimbursed, clothing and equipage to the value of $36,488.79, an increase of $4,703.42 over last fiscal year.

*Sales to other departments.*—These aggregated during the fiscal year $29,019.51. This is $28,225 less than last year. The department is reimbursed for these sales, but on account of its own needs, reduced stock, and the small appropriation for clothing and equipage, it has been impossible to extend assistance to other departments except to aid them in emergencies.

*Aid to storm sufferers.*—To relieve persons rendered destitute by the storm of April 24, 1908, in the States of Georgia, Alabama, Mississippi, and Louisiana, clothing and equipage supplies were issued to the value of $63,866.18, under the authority of an act of Congress approved May 11, 1908, by the terms of which the department was reimbursed the value of the supplies furnished.

*Improvements and changes.*—Reports received as to the quality and suitability of clothing and equipage supplies have been almost uniformly favorable. Nevertheless, it has been the study and effort of the department to make improvements wherever possible. To this end standard samples and specifications have been revised, where it seemed advisable, the most important being those for dress

coats, and caps, olive drab caps, muslin shirts, slickers, breast and hat cords, russet shoes, Alaska clothing, buttons, ponchos, tent duck, khaki trousers, winter gauntlets, tents—all kinds, bedsteads, mosquito bars, khaki cloth, winter underwear, etc.

*Collar ornaments.*—The bronze collar ornaments described in last year's annual report having, after trial, proved their superiority over the old pattern, have been adopted and will hereafter be supplied.

*Winter caps and gauntlets.*—The winter caps to be hereafter furnished will be made of olive drab woolen kersey and cotton duck, lined with olive drab mohair. They will cost less and be, it is believed, as serviceable as the old ones of muskrat. The winter gauntlets will hereafter be made of tan-colored, genuine horsehide leather with an all-wool knit lining for the hand part.

*Working clothing for the coast artillery.*—A working uniform for enlisted men of the coast artillery has been adopted, consisting of a hat, jumper, and overalls of blue denim, and a supply is now being provided for issue.

*Khaki uniform cloth.*—The weight of khaki uniform cloth has been reduced from 8 ounces per linear yard to from 6½ to 7 ounces, and the material will be softer and more porous, and therefore cooler. It will also, to meet the demands of the service, be of a slightly darker shade.

*Service uniforms for tropical and summer wear.*—While it is recognized that khaki is the best material at present available for this wear, it is believed possible to secure a more suitable and serviceable fabric. To this end consideration has been given the production of an olive-drab cotton and wool mixed fabric of light weight and capable of being laundered for use in the field in hot climates and during summer in temperate climates. Experiments and tests so far made have been encouraging, and at an early date request will be submitted that a practical test be made by both foot and mounted troops serving in the Philippines under such conditions as will make it a comparison with the cotton khaki in use.

*Shoes.*—Some slight changes in the shoes have been made in the way of improvement, and the size of greatest width, "F," is to be eliminated and a width narrower than is now in use provided.

*Leggins.*—The canvas puttee leggin described in last year's annual report having, after practical trial, proved to be an improvement over the old style, will hereafter be supplied for issue. Trial of leather leggins of similar pattern for the mounted troops has not been conclusive. One serious obstacle in the way of adopting leather leggins for issue is their cost.

*Medals and badges.*—The issue of campaign and merit badges and distribution of the congressional medal to be presented to the troops who enlisted for the war with Spain and served beyond the term of their enlistment to suppress the Philippine insurrection began in January, 1908, and to September 21, 1908, there had been sent out 115 certificates of merit, 189 civil war, 544 Indian wars, 3,850 Spanish war, 11,881 Philippine insurrection, and 421 China relief expedition campaign badges, and 1,212 of the congressional medals.

## QUARTERMASTERS' ACCOUNTS AND PROPERTY RETURNS.

*Accounts.*—Administrative audit is given all money accounts of quartermasters by this office before transmission to the Auditor for the War Department. At the beginning of the fiscal year 17 such accounts were on hand to be examined and 4,200 were received during the fiscal year; total, 4,217. Examined and transmitted to the Auditor, 4,199, leaving 18 on hand unexamined on June 30, 1908.

Compared with the fiscal year 1907, the number of accounts received decreased 1,618. This is due to the consolidation, by direction of the Treasury Department, of the various appropriations, on one account current instead of rendering separate accounts, as was formerly the practice. This is the first full fiscal year in which accounts have been so rendered. While the number of accounts is reduced, the work of examining, etc., has not been materially affected.

Of accounts of disbursing officers of the militia, 2 remained on hand and 168 were examined and transmitted to the Auditor for the War Department, through the division of accounts and later through the division of militia affairs, office of the Secretary of War. Thirteen more of these accounts were received and 15 more examined than during the fiscal year 1907.

*Property returns.*—There were on hand July 1, 1907, awaiting examination, 17; received during the fiscal year, 2,229; total, 2,246; examined, 1,992; remaining on hand June 30, 1908, to be examined, 237. Annual returns of militia officers received and examined, 47. In connection with this work 6,517 letters were written.

## CLAIMS.

*Miscellaneous claims and accounts.*—At the beginning of the fiscal year there were on hand awaiting action 154 miscellaneous claims and accounts, amounting to $34,573.59; there were received during the fiscal year 1,021, amounting to $65,296.23; a total of 1,175, aggregating $99,869.82. Final action was taken during the fiscal year on 1,135, amounting to $93,614.02. There remained on hand at the close of the fiscal year 40 claims and accounts, amounting to $6,255.80.

*Confederate horse claims.*—Under the law in effect at the beginning of the fiscal year the time for filing these claims expired April 27, 1906. The deficiency act approved May 30, 1908, extended the time for twelve months from date of passage of the act, with the proviso that all claims not presented within that time shall be forever barred. Four hundred and fifteen claims were on hand at the beginning of the fiscal year and 70 received during the fiscal year, a total of 485. Of these, 66 were approved and payment authorized and 27 disallowed, a total of 93, leaving on hand awaiting action at the close of the fiscal year 392 claims. At the beginning of the fiscal year $65,923.55 remained for settlement of these claims. The 66 settled amounted to $8,653, leaving a balance of $57,270.55 at the close of the fiscal year.

*Damages to private property.*—At the beginning of the fiscal year there were on file in this office 27 claims for damages and loss of private property of citizens, for which the Government was equitably responsible, but for the payment of which no appropriation was available. These claims had been investigated by boards of officers or

officers specially detailed for the purpose, and the aggregate amount determined to be justly due to the claimants was $4,705.45. This amount was included in the annual estimates of appropriations required for the fiscal year ending June 30, 1909. In the deficiency act approved May 30, 1908, Congress appropriated the money to pay these claims and $1,096.90 additional to pay other similar damage claims which had been presented to the department too late to be included in the annual estimates to Congress. All the above-mentioned claims on file in the office have been transmitted to the Auditor for the War Department for settlement.

*Claims under the act of July 4, 1864.*—No action has been taken during the year upon the 81 claims reported as on hand awaiting action at the beginning of the fiscal year.

During the year 68 claims which had been finally considered and disallowed by the Quartermaster-General were transmitted to the Court of Claims or to the Department of Justice upon calls therefor for use as evidence before the Court of Claims in the further investigation of the claims under the provisions of the act of Congress approved March 3, 1883.

### NEWSPAPERS AND PERIODICALS FOR ENLISTED MEN.

Under provisions of paragraph 337, Army Regulations, 1904, there was expended during the fiscal year the sum of $5,552.51 for the supply of newspapers and periodicals for the use of enlisted men at the army posts in the United States, Cuba, Porto Rico, Hawaii, and Alaska.

During the fiscal year the supply of newspapers and periodicals for 71 main recruiting stations was authorized at a cost of $10 for each station, and provisions were made for the supply of these recruiting stations with reading matter at a cost of $710 during the current fiscal year.

### NATIONAL CEMETERIES.

*New cemetery.*—A new national cemetery has been established at Greeneville, Tenn., as authorized by an act of Congress approved June 12, 1906. Being the burial place of the remains of former President Johnson, it has been designated in his honor the Andrew Johnson National Cemetery.

*Classes of cemeteries, number of interments, etc.*—There are 26 first, 20 second, 16 third, and 22 fourth class cemeteries; total 84.

The total number of interments in all national cemeteries on June 30, 1908, was: Known, 205,125; unknown, 152,207; a total of 357,332, being an increase of 1,967 during the fiscal year.

During the fiscal year 13,943 white marble headstones have been furnished to mark the graves of soldiers, sailors, and marines in national and other cemeteries, and of civilians buried in national and post cemeteries.

For decorating the graves of soldiers and sailors of the Union Army and Navy in national cemeteries, 210,000 flags, 8 by 10 inches, were purchased as authorized in the army appropriation act approved March 2, 1907.

*Bringing home remains.*—One hundred and forty-seven remains were brought from the Philippine Islands and Cuba to the United States; of these 93 were shipped home or delivered to friends for

burial, 32 were buried in the San Francisco National Cemetery and 19 in the Arlington National Cemetery, and 3 remained in the Presidio of San Francisco morgue, awaiting disposition.

*Buildings and grounds.*—Necessary repairs have been made and the grounds, roads, walks, and drives kept in good condition. New lodges are urgently needed at some of the cemeteries, but for these estimates will be submitted with explanation for each case.

The following special appropriations in the sundry civil act of March 4, 1907, have been or are being used for the purposes for which made: Arlington, Va., $10,000 for grading, draining, making roads, etc.; Knoxville, Tenn., $1,500 for new sidewalk on street adjacent to cemetery; Greeneville, Tenn., $32,000 for erection of lodge, outbuildings, inclosing walls, etc.; Vicksburg, Miss., $10,000; Port Hudson, La., $10,000; Barrancas, Fla., $32,000, and Fort Scott, Kans., $17,500, for repairs to Government road to cemetery, and Keokuk, Iowa, $1,500 for city approach to cemetery.

*Monument on Isle St. Michel.*—The army appropriation act approved July 12, 1906, appropriated $20,000 for a monument on Isle St. Michel (Crab Island), Lake Champlain, to commemorate the battles of Lake Champlain, Valcours Island, and Plattsburg. A monument of suitable and handsome design has been contracted for and is now being erected.

*Superintendents of national cemeteries.*—There are 76 superintendents, of whom 26 are of the first, 20 of the second, 16 of the third, and 14 of the fourth class. There are 6 assistant superintendents on duty awaiting appointment as superintendent. The pay of superintendents is, first class, $75; second class, $70; third class, $65; fourth class, $60 per month, and in addition they receive quarters and fuel.

The pay of these superintendents is fixed by a law passed in 1872, when living conditions were different from now, and the cemeteries contained a considerably less number of graves, monuments, etc., and were probably not so much visited. It is believed the pay of these employees should be increased to range from $100 to $75 per month. The total increased cost to the Government would be but $6,420.

## INCREASE OF THE CORPS.

In the Quartermaster-General's annual reports for the past four fiscal years, representations have been made of the need for an increased number of officers of the Quartermaster's Department. In the annual report for the fiscal year 1907 (p. 3), effort was made to give a comprehensive view of the magnitude of the department's work and field of operations, and (p. 49) of the pressing necessity for an increase of officers, to which attention is invited, and careful consideration of the need for an increase of the number of officers for the department is urged.

### INCREASE OF THE CORPS COMPARED WITH INCREASE OF THE ARMY.

On January 1, 1898, with a total enlisted strength of 26,610 men, practically no foreign possessions to look after, no duties such as the transport service, and comparatively little building, the army required 57 officers of the Quartermaster's Department. The present authorized strength of the army, including the Hospital Corps, *which must be sheltered* and supplied, is 86,751, an increase of about

two and one-fifth of its former strength, while the Quartermaster's Department has only been increased to 96 officers, or one officer more than two-thirds of its strength prior to the increase of the army, which is an increase of 39 officers. Had the increase of quartermasters been in proportion to the increase in the army there should have been provided 206 officers of the department.

DUTIES OF THE DEPARTMENT OTHER THAN THOSE INCIDENT TO INCREASE OF THE ARMY.

We have added since January 1, 1898, the Philippine Islands, Porto Rico, and the Canal Zone, established the army general staff and the army transport service, and temporarily occupy Cuba. All these require quartermasters in addition to those required as incident to the increase of the army. The total number of officers of the Quartermaster's Department in service outside the limits of the United States and not including the Territory of Hawaii, on October 1, 1908, was: In Panama, 1; the Philippine Islands, 11; Nagaski, Japan, 1, and Cuba, 4; total, 17. Ten officers are required as quartermasters of transports, and one is on the General Staff, or 28 officers required for specific duties, leaving 11 of the 39 by which the Department has been increased since 1898 for duties incident to the increase of the army alone.

In other words, it has taken 28 officers of the 39 increase to perform duties and meet conditions entirely separate and apart from those involved in the increased enlisted strength of the army to three and one-fifth times its former strength, so that practically the increase in the corps to correspond with the three and one-fifth times increase of of the army was but a little more than one and one-fifth times its own number prior to the said increase. The comparative increase in officers to number of enlisted men, considering the new duties devolving upon the department, is even less, as will be hereinafter shown.

INCREASE OF THE CORPS COMPARED WITH INCREASE OF BUSINESS.

Another interesting comparison of the inadequate increase in the corps as compared with that of the army, is that for the fiscal year 1898, not considering appropriations made for conduct of the Spanish war, there was appropriated for the regular service of the Quartermaster's Department the sum of $7,711,367.75, while for the fiscal year 1908 there was appropriated $35,816,277.81. That is, nearly five times as much money to be handled by but two-thirds more officers. This increase in the sums of money to be handled of course stands for increases in all kinds of work devolving upon the department, for the expenditure carries with it the duties incident to all the purposes for which applied, and it may therefore be said that the whole volume of work of the department has been increased in proportion to the increase of appropriations, while the number of officers to do the work has not been so increased.

CONSTRUCTION WORK.

The enlargement of the army necessitated construction of shelter for the increased number of troops, for the increased supplies, animals, etc., required, and the construction of new, or extension of old, water

and sewer systems, lighting plants, and all the auxiliary buildings and utilities at military posts. In some instances the work amounted to a practical rebuilding of the post. This work since 1903, at least, has averaged in money value about $9,000,000 per year. At most of the posts its extent and importance was such as to require the undivided attention of one officer to attend to advertising for bids, making awards and contracts, supervising the work, making disbursements, etc. This expanded the work of the department greatly beyond like demands upon it in 1898 and prior years.

It is obvious that certain qualifications are required of a quartermaster in charge of construction work not possessed by all officers of the Quartermaster's Department, or other branches of the service. Use has been made of officers of the department, so far as possible, post quartermasters where their regular duties permitted and they were qualified, and of qualified line officers, where no others were available and their detail seemed in the interests of the service and could be secured.

Of the appropriation for 1898, but $1,252,000 was for construction and repair, and the construction was of such nature and so distributed that there was not then the pressing need that now exists to place it in charge of constructing quartermasters. Nevertheless, on January 1, 1898, there were 13 officers of the department (3 majors and 10 captains) engaged solely in construction work, and 3 captains in charge of construction, and also post quartermasters. At present 15 officers of the department (2 majors and 13 captains) are constructing and 5 captains post and constructing quartermasters. Comparatively, of the officers of the department on January 1, 1898, 22.8 per cent, and on October 1, 1908, 15.6 per cent, were constructing quartermasters, a decrease of 7.2 per cent; as post and constructing quartermasters the percentage January 1, 1898, and October 1, 1908, is approximately the same, although the volume of that has greatly increased.

The appropriations for construction and repair for the fiscal year 1908, including indefinite and special appropriations, aggregated $9,280,416.45, or nearly seven times the amount for 1898, besides extensive construction projects in progress under contracts of previous fiscal years. The foregoing sum includes only money appropriated in terms for construction. In addition to this sum very considerable amounts from the appropriation "Regular supplies" were used for construction of bakeries and installation of heating and lighting systems, and from the appropriation "Army transportation," for the installation of plumbing in buildings, construction, extension, and repair of water and sewer systems, roads, walks, wharves, etc. Expenditures for these objects run into large sums, but time has not been taken to compile exact data. This work, which was construction of shelter for the enlarged army, its supplies, etc, was begun shortly after the increase of the army was authorized and is still in progress. It will continue for some time, and the recent increase in the Artillery Corps will extend it, as is indicated by the appropriation for the fiscal year 1909 of $2,139,060 for construction of buildings for the coast artillery, aside from amounts required for installation of plumbing, heating apparatus, and lighting fixtures; construction of roads, walks, wharves, and grading. The Chief of Artillery estimates

that it will require not less than $3,311,945 to complete the work of constructing buildings for coast artillery, which must be done by quartermasters or officers of the line detailed as acting quartermasters.

Construction work at military posts and stations has been, and still is, so extensive and important, and covers so extended a period, that post quartermasters are frequently not qualified to supervise it, and those who are usually have not the time to devote to it in addition to their regular duties, while their being subject to frequent changes of station renders any continuity of policy impracticable and can only result in hopeless confusion should an attempt be made to place them in charge of this work generally.

In addition to the officers of the department, 1 major, 24 captains, and 28 lieutenants of the line (total 53) were, on October 1, 1908, detailed as acting quartermasters in connection with construction work. Of these, 5 captains were employed solely on construction work; 1 captain and 7 lieutenants were in charge of construction work of such importance that it should receive the entire attention of the officer in charge, but in addition were doing duty as post quartermasters. The remaining 18 captains and 21 lieutenants were, doubtless because of their duties in connection with construction, prevented from performing duties with their commands which should have fallen to them were a sufficient number of quartermasters available for the natural duties of the department. The necessity for the time of line officers being wholly or partially diverted to these, among other duties, is what has developed the protest continually growing stronger and more insistent against depletion of commands of officers for staff duties.

The arrangement is no more satisfactory to this department than it is to the line. Because of the insufficient number of officers in the Quartermaster's Department the supervision of important and intricate construction work in progress and contemplated at a number of posts must necessarily be intrusted to young subordinate officers without previous experience and training. Then there is the additional disadvantage, that at all places where these young officers are in charge of construction pertaining to the Quartermaster's Department they are required to perform a part of their regular garrison duties and are in most cases also charged with the labor and responsibility of post or artillery district quartermasters, or other staff duties under the direction of their post commanders. But a greater drawback than all these to a satisfactory supervision of intricate construction work, such as is required for modern buildings and improvements involving not only construction of buildings, but also of wharves, sea walls, water supply and sewer systems, pumping, ice manufacturing and lighting plants, roads, walks, etc., is the fact that these line officers are subject to changes of station incident to their military duties and status, over which changes the Quartermaster-General has no control, because in their assignment their duties and services as line officers are first considered, and the supervision of construction work falling to their position is only an incident.

Of the 28 lieutenants of the line now on duty as quartermasters in charge of construction, only 6 have been on that duty a year; 14 have been changed since June, 1908, and 7 within the last three

months. At several posts there have been three changes of quartermasters in charge of construction within a period of a year, and two changes in a year are very frequent.

Under such conditions it is impossible for any officer, however able and willing, to give to the supervision of important and intricate construction work the time and attention that is necessary.

### QUARTERMASTERS FOR THE ARMY TRANSPORT AND FOREIGN SERVICE.

The transport service is wholly in addition to anything the department had to care for on January 1, 1898. That each transport must have a quartermaster will not, it is assumed, be questioned. On October 1, 1908, there were 10 officers on this duty, 2 officers of the department and 8 line officers acting quartermasters. In addition, 1 officer was required for service at Newport News, Va., in charge of the Cuban transport service, and 1 as assistant to the general superintendent of the army transport service at San Francisco, Cal., who but for this service would not be required. (One on shore duty in connection with the transport service at Manila is included in those mentioned as in the Philippine service.)

In the Philippines, including Nagasaki, 12 are on duty. This is a total of 24, to which should be added 1 officer in Panama, 4 in Cuba, and 1 on the General Staff, making a total of 30 officers. Thus it will be seen that 30 officers are required on foreign, transport, and other service not incident to the increase of the army, reducing to 9 those whose duties are incident to the increase of the enlisted strength of the army. In addition, 1 quartermaster is in charge of the Leavenworth Military Prison, 3 signal corps officers were acting as quartermasters on the steamers *Burnside*, *Liscum*, and *Cyrus W. Field*, and 4 artillery officers acting as quartermasters on the torpedo planters, 8 in all. Were these duties performed by quartermasters, but one would remain of the increase.

The number of officers of the Quartermaster's Department to correspond with the increased strength of the army should be, on the same ratio by which the army has been increased, 206. The number required for duties not incident to the increase of the army is 38, a total of 244.

It would, therefore, seem apparent that everything goes to demonstrate that the increase of officers in the Quartermaster's Department has not kept pace with the requirements of the service, and that an increase in the number of officers for the department is urgently needed.

### PRESENT DUTIES OF QUARTERMASTERS.

The officers of this department and those regularly detailed as quartermasters for four years under the act of February 2, 1901, and the line officers acting as quartermasters were on October 1, 1908, engaged on the following duties, viz:

| Duty. | Officers of the quartermaster's department. | | | | | | Officers of the line detailed as acting quartermasters. | | | | Grand total. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rank. | | | | | Total. | Rank. | | | Total. | |
| | Brigadier-general. | Colonel. | Lieutenant-colonel. | Major. | Captain. | | Major. | Captain. | Lieutenant. | | |
| Quartermaster-General's Office | 1 | 1 | 1 | 4 | 5 | 12 | .... | .... | .... | .... | 12 |
| General staff | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 1 |
| Detached duty—Panama Canal Commission | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 1 |
| Chief quartermasters and assistants: | | | | | | | | | | | |
| Department of California | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 1 | |
| Department of the Colorado | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | 1 |
| Department of the Columbia (also constructing quartermaster) | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 1 | |
| Department of Dakota | .... | .... | 1 | .... | .... | 2 | .... | .... | .... | .... | 2 |
| Assistant in charge of construction | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Department of the East | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | 2 |
| Assistant (also constructing quartermaster) | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 1 | |
| Department of the Gulf | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | |
| Department of the Lakes | .... | .... | 1 | .... | .... | 2 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Department of the Missouri | .... | .... | .... | 1 | .... | 2 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Department of Texas | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | |
| Philippines division | .... | .... | .... | .... | .... | 6 | .... | .... | .... | .... | 9 |
| Assistant | .... | .... | 1 | .... | 1 | | .... | .... | .... | .... | |
| Assistant in charge of land transportation | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Assistant in charge of water transportation.[a] | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Report of assignment not received | .... | .... | .... | .... | 2 | | .... | .... | .... | .... | |
| In charge burial corps and army morgue (chaplain) | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 1 | |
| In charge Bataan Island, P. I., coal mine | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | |
| In charge Overton-Keithly road | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | |
| Department of Luzon | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | |
| Department of Mindanao | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Department of the Visayas | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 2 |
| Assistant (also post quartermaster) | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | |
| General depots: | | | | | | | | | | | |
| New York, N. Y. | .... | 1 | .... | .... | .... | 3 | 1 | .... | .... | 1 | 4 |
| Assistants | .... | .... | .... | 1 | 1 | | | | | | |
| Philadelphia, Pa | .... | .... | 1 | .... | .... | 4 | .... | .... | .... | .... | 4 |
| Assistants | .... | .... | .... | .... | 3 | | .... | .... | .... | .... | |
| Jeffersonville, Ind | .... | 1 | .... | .... | .... | 3 | .... | .... | .... | .... | 3 |
| Assistants | .... | .... | .... | 1 | 1 | | .... | .... | .... | .... | |
| San Francisco, Cal | .... | .... | 1 | .... | .... | 2 | .... | .... | .... | .... | 3 |
| Assistant (also in general superintendent's office, army transport service)[b] | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Manila, P. I. | .... | .... | .... | 1 | .... | 2 | .... | .... | .... | .... | 3 |
| Assistant | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| St. Louis, Mo. | .... | .... | 1 | .... | .... | 2 | .... | .... | .... | .... | 2 |
| Assistant | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Washington, D. C | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 1 |
| Boston, Mass | .... | .... | .... | 1 | .... | 2 | .... | .... | .... | .... | 2 |
| Assistant (the captain; also constructing quartermaster) | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Fort Reno remount depot | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Depots and purchasing and distributing offices: | | | | | | | | | | | |
| Honolulu, Hawaii (also constructing quartermaster and in charge of army transport service) | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Pittsburg, Pa | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| New Orleans, La. (also constructing quartermaster) | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Nagasaki, Japan | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Seattle, Wash. (also in charge of army transport service, Puget Sound) | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 1 |
| Portland, Oreg. (also assistant to chief quartermaster, Department Columbia, and constructing quartermaster) | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Purchasing animals | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | |
| Depot for animals awaiting shipment to the Philippine Islands | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | |

| Duty. | Officers of the quartermaster's department. | | | | | | Officers of the line detailed as acting quartermasters. | | | | Grand total. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rank. | | | | | | Rank. | | | | |
| | Brigadier-general. | Colonel. | Lieutenant-colonel. | Major. | Captain. | Total. | Major. | Captain. | Lieutenant. | Total. | |
| Constructing quartermasters | .... | .... | .... | 2 | 13 | 15 | .... | 4 | .... | 4 | 19 |
| Post quartermasters | .... | .... | .... | 1 | 2 | 3 | .... | .... | .... | .... | 3 |
| Post and constructing quartermasters | .... | .... | .... | .... | 5 | 5 | .... | 18 | 28 | 46 | 51 |
| Assistant to post and constructing quartermasters | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | 1 |
| Transport service: | | | | | | | | | | | |
| Manila, P. I: | | | | | | | | | | | |
| Assistant to division chief quartermaster | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | (a) |
| San Francisco, Cal. | | | | | | | | | | | |
| Assistant to depot quartermaster | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | (b) |
| Newport News, Va. | | | | | | | | | | | |
| Superintendent army transport service; also depot quartermaster | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| On transports and other vessels | .... | .... | .... | .... | 2 | 2 | .... | 5 | 10 | 15 | 17 |
| Military prisons | .... | .... | .... | c 1 | 1 | 2 | c 1 | .... | .... | 1 | 3 |
| Cuba: | | | | | | | | | | | |
| Chief quartermaster | .... | .... | .... | 1 | .... | } | .... | .... | .... | .... | |
| Assistant | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| Depot quartermaster | .... | .... | .... | .... | 1 | 4 | .... | .... | .... | .... | 4 |
| Post quartermaster | .... | .... | .... | .... | 1 | | .... | .... | .... | .... | |
| En route changing station | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Inspecting supplies being manufactured | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 |
| Total | 1 | 6 | 9 | 20 | 60 | 96 | 2 | 32 | 45 | 79 | 175 |

c Commanding and in charge of construction.

Twelve quartermasters, including the Quartermaster-General, were on duty in this office. This is double the number on such duty on January 1, 1898, but is rendered necessary by the increased volume of work. The clerical force of the office has been increased from 100 to 224, the volume of work of the department and the field of its operations greatly enlarged, as already explained. To relieve any of the above-mentioned officers at this time would be detrimental to the work of this office. In fact, it would be advantageous to have an additional officer to take up the duties of officers who may be sick or compelled to be absent from the office on temporary duty.

Fourteen quartermasters are on duty as chief quartermasters, and in these no reduction can be made. This is 6 more than were required for like duty January 1, 1898, and is made necessary because there are more such places. The number of quartermasters on this duty at the last date was the same percentage of the strength of the corps as those now on such duty constitute.

Five quartermasters and 7 line officers are on duty as assistants to chief quartermasters, for which duty more are required. This is but 1 more than was on this duty January 1, 1898, and it is thought no one will question the need for an increased number at this time, as with the increase of the army the work of chief quartermasters has increased.

Each chief quartermaster should have at least 1 assistant, not only to aid him in his work, but to act in an emergency involving the chief's absence. At present the chief quartermasters of but three territorial departments, in the United States, of the Philippines Division, and of the Cuban expedition, have officers of the Quarter-

master's Department for assistants. Doubtless at department headquarters where the chief quartermaster has no quartermaster for an assistant, some line officer has been performing such duties by direction of the department commander.

Nine quartermasters are on duty as depot quartermasters, in charge of general depots, in which no reduction can be made. The depots are necessary for supply of the army, and officers must be in charge of them. At the principal ones, as New York City, Philadelphia, Jeffersonville, and San Francisco, they should be of high rank, the importance of the work demanding it. Seven quartermasters were required for this work January 1, 1898.

Nine quartermasters and 1 line officer are on duty at minor depots, purchasing, distributing, and disbursing offices at points where it is absolutely necessary to maintain such offices. No officers appear to have been especially required for this duty January 1, 1898.

Eleven quartermasters and 1 line officer are on duty as assistants to depot quartermasters, and this number can not be reduced without disadvantage to the administration of the depots and detriment of the interests of the service. An increased number of quartermasters is needed for this service, in order that there may be a greater degree of supervision and inspection of the purchase and manufacture of supplies by commissioned officers expert in certain lines. There should be additional assistants to the depot quartermasters at New York, Philadelphia, Jeffersonville, and San Francisco, Boston, Manila, and, while we occupy Cuba, at Havana. Eight officers were on this duty January 1, 1898, as against 12 now with the increased army and with vastly greater volume of supplies and number of employees to be handled and shipments and payments to be made.

Fifteen quartermasters and 4 line officers are on duty as constructing quartermasters at points where, on account of the importance and magnitude of the work, or for other reasons, post quartermasters are not available. With all the increased appropriations for buildings previously referred to, this is but 6 more officers than were on this duty January 1, 1898.

Three quartermasters are on duty as quartermasters at large and important posts. They are needed where stationed, and there are posts needing officers of the department which can not be supplied from the present number because imperative need requires them to be on other duty. There were 5 quartermasters on this duty January 1, 1898, so that it is plain that the number now available for this duty does not correspond to the increase of the army and development in importance of posts, recruiting depots, and the different service schools. Twelve at least should now be on this duty. At those posts where military schools are located and at several of the larger posts there should be a quartermaster and an assistant to satisfactorily perform the duties devolving upon the department. It has been necessary within the past year to reduce the number of quartermasters on this duty one-half to provide for other duties devolving upon the department, reluctantly leaving their duties to fall upon line officers.

Five quartermasters are now on duty as post and constructing quartermasters, and one line officer is on duty as assistant post and constructing quartermaster. These are at posts where [illegible] struction work is not of sufficient magnitude to require all

tion of the constructing quartermaster (except in the instance where he has an assistant), but leaves him time to attend to the quartermaster business of the post. The number of quartermasters on this duty ought to be increased so as to relieve all line officers. Work would thereby be expedited and the interests of the service advanced. During the past year, however, the number of quartermasters on this duty has been reduced by three, and the same remark applies as above concerning post quartermasters.

Two quartermasters and 15 line officers are on duty as transport quartermasters. This duty is imperative, and, as already stated, is additional to any pertaining to the department January 1, 1898. Its continuation seems not to have been considered at the time the number of officers for the corps was increased. These officers should all be quartermasters. One quartermaster is required for shore duty, also in connection with the transport service at Manila, P. I., one at Nagasaki, Japan, where a coaling station must be maintained, one at Newport News, Va., and one at San Francisco, Cal., where he would be one of the assistants to the depot quartermaster in his capacity of general superintendent of the army transport service, making in all 21 officers for the army transport service.

One quartermaster is en route changing station to the Philippine service, and the duty of 1 recently arrived there was not reported at the time this was being written. It will probably always be necessary to allow for a proportion unavailable because of this reason, and there should be some allowance for officers sick or on leave and for vacancies incident to the selection and detail of officers whose four-year detail has expired. Frequently some time must elapse before the newly detailed officer is available to the department.

One line officer is on duty as quartermaster and constructing quartermaster at the Alcatraz Island, Cal., military prison, and 2 line officers and 1 chaplain in the Philippine Islands are on duty at the Batan Island coal mines, the Overton-Keithly road, and the United States morgue.

One quartermaster is on detached duty with the General Staff, a duty not existing January 1, 1898, and probably not considered in connection with the increase of officers of the department.

One quartermaster is on duty as depot and constructing quartermaster at Honolulu, Hawaii, and can not be dispensed with.

Twelve officers of the department (including the depot quartermaster at Nagasaki) are on duty in the Philippine Islands or en route thereto, and 4 in Cuba. From both places have come requests for additional quartermasters, and the demand from the Philippine Islands has been urgent. Beyond question additional officers of the department are needed in both places, and this office also feels the need of more for its regular duties at home and hopes that some effective consideration will be given the recommendations and representations heretofore and now made for an increase in the number of officers of the quartermaster's department.

### NEEDS OF THE DEPARTMENT.

From the foregoing statement it will be seen that on October 1, 1908, there were 175 officers actually engaged on the duties of the Quartermaster's Department, of whom 96 were quartermasters and

79 officers of the line acting as quartermasters; that on some of these duties a less number of officers were employed than prior to the increase of the army. Forty-five of the 79 line officers were lieutenants performing duties which, because of their importance, required ripe experience and mature judgment, and should be performed by captains. As is explained hereafter, even with this assistance from the line, the Quartermaster's Department is in need of officers for many important duties for which they can not be provided.

The depot quartermasters at Jeffersonville, San Francisco (who is also general superintendent of the army transport service), St. Louis, and Boston, should each have a major as assistant in the administration of his office and to act during his absence or inability. The quantity of supplies purchased, manufactured, and distributed, and the number of employees to be handled and directed by the officers in charge of these depots is enough to require this. It is safe to assert that no commercial concern handling a like volume of business and number of employees is managed by as few administrative officers as are the general depots of the department.

More captains are needed as assistants at the general depots of the department, for inspection of supplies purchased and being manufactured under contract. They should be permanent officers of the department, willing and able to take up the study of the manufacture of textiles, clothing, leather, shoes, metals, etc., and follow it until they become experts. Expert knowledge in these matters as in the construction of buildings, water and sewer systems, etc., while of marked advantage to the department, and consequently of great advantage to the army, affords no qualification whatever for duty with the line. Officers who are in the way of becoming qualified along these lines should, therefore, not be subject to return to the line. The number of such assistants at each of the more important depots could with advantage be as follows: At New York, 5; Philadelphia, 5; Jeffersonville, 5; San Francisco, 4; St. Louis, 4; Washington, 1; Boston, 4, and Seattle, 1. This would allow a reduction in the number of civilian inspectors, etc., and in the first instance place a great deal and finally almost all of the important inspection work of the department in the immediate control of its officers. Efficiency of inspection would be increased thereby, and their integrity made more certain. There is no way in which civilians can be held to as firm responsibility for the proper performance of duties and efficiency of their work as can officers.

The quartermaster at each military prison should be a major and have a captain as assistant. These prisons have in late years become institutions of considerable magnitude. The duties of the quartermasters are the same as those of wardens in civil prisons, and it is safe to assume that no other prisons of the population of those at Fort Leavenworth or Alcatraz Island can be found without at least one deputy or assistant warden, and possibly more than one. An officer on this duty should always have an assistant to relieve him of details and minor duties and act in case of necessary absence or inability.

There should be four remount depots in as many different sections of the country. One principal depot should be in charge of an officer of

the rank of lieutenant-colonel with a captain as assistant, and the other three should be in charge of majors with captains as assistants. Efficiency in handling horses is only gained through long experience and careful study, and to supply the army with the requisite number of animals of proper types, in good condition, through the most economical means is one of the most important duties of the department. The officers in charge of these depots should be of ripe experience, good judgment, and expert horsemen. The captains selected for their assistants should be of good judgment, sufficient experience to assist in and have temporary charge of the work when necessary, and have aptitude to finally become qualified to have full charge of the work.

The 2 cable ships and 8 mine planters should have quartermasters with the rank of captain to have charge of their crews, purchase and supervision of supplies for their operation, etc., and to keep the department in touch with this service, leaving the officers of the signal or artillery corps on each free to perform the duties of their respective departments.

The duties of the Quartermaster's Department at not less than six of the larger and more important military posts are such that the quartermaster ought to be a major with a captain as assistant.

In the Philippine Islands the Keithly-Overton road, and the Batan coal mines should be in charge of captains and quartermasters and a captain of the Quartermaster's Department should be quartermaster at Camp Keithly.

Each of the 27 artillery districts should have an officer of the department as quartermaster. The quartermaster work at each of these headquarters is sufficient to require this, and the nature and importance of the seacoast defense work and duties of the Quartermaster's Department in relation thereto make necessary the keeping in close touch therewith. This would also relieve officers of the artillery corps now performing the duty and enable them to devote all their time and attention to the duties of their arm of the service.

To provide officers of the proper rank for the duties of the department as outlined, would require the following: Brigadier-general, 1; colonels, 10; lieutenant-colonels, 18; majors, 37; captains, 150. This strength would enable the department to perform all its duties without the necessity for assistance from officers of the line—is what should be given it with that end in view—and is the least in number and rank of officers with which the department ought to be expected to, or can, carry on the work devolving upon it in time of peace, with the present organization of the army, and require no assistance from line officers. No allowance is made for loss of service of officers sick, on leave, reporting for duty after being detailed, or changing station between the United States and Philippines, which, especially the latter, is considerable. The strength of the corps ought not to be less than above indicated. The stations and duties of the officers of such a force would be generally about as shown in the following table:

*Duties of officers of the Quartermaster's Department in time of peace under needed increase.*

| Duty. | Rank. | | | | | Total. |
|---|---|---|---|---|---|---|
| | Brigadier-general. | Colonel. | Lieutenant-colonel. | Major. | Captain. | |
| Quartermaster-General's office | 1 | 2 | 2 | 5 | 2 | 12 |
| General Staff | | | | 1 | | 1 |
| Chief quartermaster's offices: | | | | | | |
| Department of California | | 1 | | | 1 | 2 |
| Department of the Colorado | | | 1 | | 1 | 2 |
| Department of the Columbia | | | 1 | | 1 | 2 |
| Department of Dakota | | | 1 | | 1 | 2 |
| Department of the East | | 1 | | | 2 | 3 |
| Department of the Gulf | | | 1 | | 1 | 2 |
| Department of the Lakes | | | 1 | | 1 | 2 |
| Department of the Missouri | | 1 | | | 1 | 2 |
| Department of Texas | | | 1 | | 1 | 2 |
| Philippines Division | | 1 | | | 2 | 3 |
| Department of Luzon | | | 1 | | 1 | 2 |
| Department of Mindanao | | | 1 | | 1 | 2 |
| Department of the Visayas | | | 1 | | 1 | 2 |
| Bataan Island coal mine | | | | | 1 | 1 |
| Keithly-Overton road | | | | | 1 | 1 |
| General depots: | | | | | | |
| New York | | 1 | | 1 | 5 | 7 |
| Philadelphia | | 1 | | 1 | 5 | 7 |
| Jeffersonville | | 1 | | 1 | 5 | 7 |
| San Francisco (also general superintendent, Army Transport Service) | | 1 | | 1 | 4 | 6 |
| Manila, P. I | | | 1 | | 2 | 3 |
| St. Louis | | | 1 | 1 | 4 | 6 |
| Washington, D. C | | | 1 | | 1 | 2 |
| Boston | | | 1 | 1 | 4 | 6 |
| Depot and purchasing and distributing offices: | | | | | | |
| Honolulu | | | | | 1 | 1 |
| Pittsburg | | | | | 1 | 1 |
| New Orleans | | | | | 1 | 1 |
| Nagasaki, Japan | | | | | 1 | 1 |
| Seattle (also in charge army transport service) | | | 1 | | 1 | 2 |
| Omaha | | | | 1 | | 1 |
| Chicago | | | 1 | | | 1 |
| Portland, Oreg | | | | | 1 | 1 |
| 3 recruiting depots | | | | | 3 | 3 |
| 4 remount depots | | | 1 | 3 | 4 | 8 |
| Purchasing animals | | | | 4 | | 4 |
| Post quartermasters: | | | | | | |
| Camp Keithly, P. I | | | | 1 | | 1 |
| Fort William McKinley, P. I | | | | 1 | 1 | 2 |
| Presidio of San Francisco | | | | | 1 | 1 |
| Fort Riley | | | | 1 | 1 | 2 |
| Fort Sam Houston, Tex | | | | 1 | 1 | 2 |
| Fort Leavenworth | | | | 1 | 1 | 2 |
| Fort Sheridan | | | | | 1 | 1 |
| Fort D. A. Russell | | | | 1 | 1 | 2 |
| Fort Crook, Nebr | | | | | 1 | 1 |
| Fort Monroe | | | | 1 | 1 | 2 |
| Fort Ethan Allen | | | | | 1 | 1 |
| Fort Oglethorpe | | | | | 1 | 1 |
| Fort Benjamin Harrison | | | | | 1 | 1 |
| Military Academy | | | | 1 | | 1 |
| Artillery district headquarters | | | | | 27 | 27 |
| Army transport service: | | | | | | |
| Manila, P. I | | | | 1 | 2 | 3 |
| San Francisco (assistant to general superintendent, army transport service) | | | | 1 | | 1 |
| Newport News | | | | 1 | | 1 |
| On vessels | | | | | 14 | 14 |
| 8 mine planters, 2 cable steamers | | | | | 10 | 10 |
| Constructing, and post and constructing quartermasters | | | | 5 | 20 | 25 |
| 2 military prisons | | | | 2 | 2 | 4 |
| Total | 1 | 10 | 18 | 37 | 150 | 216 |

ACTIVE SERVICE NEEDS.

The Field Service Regulations (par. 26) specify, for a division, one chief quartermaster, lieutenant-colonel; for a brigade, one quartermaster, major.

Should the army be called into the field at its maximum authorized strength let it be assumed for example that it would be organ-

ized as 1 division of 6 brigades, and 10 divisions of 2 brigades each. The division of 6 brigades would approximate the present strength of the forces in the Philippines, requiring a continuation in that service of the 12 officers of the department now on duty there. The remainder would then constitute 10 divisions of 2 brigades each, or 20 brigades. There would be required for the divisions 10 chief quartermasters, lieutenant-colonels; for the brigades, 20 quartermasters, majors; a total of 30 officers without those in the Philippines. It is also assumed, though not provided in the Field Service Regulations, that each division chief quartermaster would require at least one officer to have charge of wagon trains, their operation, supply, etc., who should have the rank of captain. This would add 10 to the above 30, making a total of 40. Experience has shown that officers for this latter duty are necessary.

For "Bases and lines of communication" paragraph 24, Field Service Regulations provide for, (*b*) a chief of transportation, (*c*) a chief of railway service, (*d*) a chief of transport by water. No clear indication is given as to what unit these duties apply. That, of course, would have to be governed by conditions. It is assumed that a division or independent command is such unit, and the Philippines as being supplied by officers on duty there. It is assumed that until legislation could be had providing additional officers for the needs of active field service, depot quartermasters at points at which conditions would determine could perform the duties of chiefs of transportation with assistants to have charge of railway service, and of transport by water. This is similar to the present arrangement. Depot quartermasters at New York, Philadelphia, Jeffersonville, and St. Louis and the quartermasters at Newport News, Va., Portland, Oreg., Seattle, Wash., and New Orleans, La., perform similar duties to those contemplated. Some of this class of duty might also, with additional assistants, devolve upon such chief quartermasters of departments as would have to be retained.

It is a question to what extent chief quartermasters of territorial departments and their assistants could be transferred to field service. Certain of them would, is is thought, have to remain at department headquarters to supply the coast artillery and to attend to other matters of administration that could not be wholly abandoned. It would probably be necessary, in any event, to retain chief quartermasters for the Departments of the East, the Gulf, California, and the Columbia. The others could be temporarily placed in charge of officers of the lower grades.

In case of active field service no officers from the general depots of the department could be spared. Those now on this duty (in addition to those in the Philippines) would have to be retained on their present duties. The work of purchasing and forwarding supplies and equipment would be increased so that an increased number would be required to handle the greater volume of business and perform additional duties connected with transportation, etc., which would fall upon them.

Neither could there be any reduction in the number of quartermasters required for vessels of the army transport service. On the contrary, were any considerable part of a movement by water the number of these would have to be increased.

*In case of need for* any immediate increase in the number of *remounts for cavalry* and artillery, and of draft and pack animals

for transportation, as in active field service, an increase in the number of officers on this duty would become necessary.

In case of active field service operations, construction work would be discontinued, troops generally leave the posts, and probably some department headquarters be discontinued. This would release some officers for field service. The depots of the department would, however, have to increase their activity in procuring clothing and equipage, forage, animals, and other quartermaster's supplies and in transporting these and the supplies of the subsistence, medical, ordnance, and other departments. No reduction would therefore be warranted in the number of officers on duty at the general depots, or purchasing, distributing, and transportation offices of the department. On the contrary there should be an increase in the number of officers' assistants at these depots and offices. To enable the department to simply maintain the peace organization heretofore shown to be needed at its depots and offices and furnish the officers required by field-service regulations as previously explained would require about the following personnel:

| Duty. | Rank. | | | | | Total. |
|---|---|---|---|---|---|---|
| | Brigadier-general. | Colonel. | Lieutenant-colonel. | Major. | Captain. | |
| Quartermaster-General's Office | 1 | 2 | 2 | 5 | 2 | 12 |
| General staff | | | | 1 | | 1 |
| Chief quartermasters for 10 divisions | | | 10 | | | 10 |
| Quartermasters in charge of wagon trains | | | | | 10 | 10 |
| Quartermasters for 20 brigades | | | | 20 | | 20 |
| Philippine Islands counted as 1 division of 6 brigades | | | 1 | 6 | | 7 |
| Chief of transportation (wagon and rail) | | | | | 1 | 1 |
| Chief of transportation by water | | | | | 1 | 1 |
| Manila depot | | | 1 | | 2 | 3 |
| Nagasaki depot | | | | | 1 | 1 |
| Bataan coal mines | | | | | 1 | 1 |
| Keithly-Overton road | | | | | 1 | 1 |
| Bases and lines of communication, 1 for each division: | | | | | | |
| Chiefs of transportation | | | | | 10 | 10 |
| Chief of railway service | | | | | 10 | 10 |
| Chiefs of transport by water | | | | | 10 | 10 |
| General depots: | | | | | | |
| New York City | | 1 | | 1 | 5 | 7 |
| Philadelphia, Pa | | 1 | | 1 | 5 | 7 |
| Jeffersonville, Ind | | 1 | | 1 | 5 | 7 |
| St. Louis, Mo | | | 1 | 1 | 4 | 6 |
| San Francisco, Cal | | 1 | | 1 | 4 | 6 |
| Boston, Mass | | | 1 | 1 | 4 | 6 |
| Washington, D. C | | | 1 | | 1 | 2 |
| New Orleans, La | | | | | 1 | 1 |
| Chicago, Ill | | | 1 | | | 1 |
| Omaha, Nebr | | | | 1 | | 1 |
| Honolulu, Hawaii | | | | | 1 | 1 |
| Newport News, Va | | | | 1 | | 1 |
| Remount | | | 1 | 3 | 4 | 8 |
| Purchasing animals | | | | 4 | | 4 |
| Transport quartermasters | | | | | 14 | 14 |
| Mine planters and cable ships | | | | | 10 | 10 |
| Artillery district headquarters | | | | | 27 | 27 |
| Two military prisons | | | | 2 | 2 | 4 |
| Department chief quartermasters to care for Coast Artillery: | | | | | | |
| Department of the East | | 1 | | | | 1 |
| Department of the Gulf | | 1 | | | | 1 |
| Department of California | | 1 | | | | 1 |
| Department of the Columbia | | 1 | | | | 1 |
| Other departments— | | | | | | |
| Department of the Colorado | | | | | 1 | 1 |
| Department of Dakota | | | | | 1 | 1 |
| Department of the Lakes | | | | | 1 | 1 |
| Department of the Missouri | | | | | 1 | 1 |
| Department of Texas | | | | | 1 | 1 |
| Total | 1 | 10 | 19 | 45 | 141 | 226 |

Some of the duties of quartermasters for "bases and lines of communication" could probably be performed by depot quartermasters, as explained; they would, however, need more assistants. Possibly in active service, under some conditions, all or part of the 10 captains to have charge of wagon trains might not be required, nor all those as chief quartermasters of territorial departments other than those to care for coast artillery posts. On the other hand, no provision is made in the foregoing statement for additional officers to purchase animals, which would be required; nor for the transport service, which would be necessary in connection with an expeditionary force; nor for the inspection and purchase of forage, an important duty; nor for duty in the Quartermaster-General's office, where more assistance would be needed. Viewed from any possible standpoint this office feels that it is asking for a less number of officers than its duties demand.

### THE DETAIL SYSTEM

The experience of this department with the detail system has not been favorable to its continuance. While the officers detailed for four years' service are all believed to be capable of eventually becoming efficient quartermasters, they are as a rule without technical knowledge to make them available for many of its duties, and as a consequence are not able to at once take up and perform their work in the best and most economical manner.

The spirit in which the detailed officers enter upon their duty with the department is almost invariably highly commendable. With but few exceptions they have at once taken up and assiduously followed the study of the general administrative work of the department and applied themselves to mastering the details of that duty upon which immediately engaged. Thus, during the tour for which detailed, those who apply themselves acquire a knowledge of the regulations and customs governing the department, learn its paper work, how to prepare contracts, familiarize themselves with the more important statutes and decisions relating thereto and to disbursements, and by the expiration of that period are achieving the skill of experts in construction work; the inspection of textiles, shoes and leather, and metals; the management of transportation by rail or water; the selection of animals, or other important lines of quartermaster's work. They become excellent quartermasters and would prefer to remain in the department. To do this, however, they must have neglected or entirely abandoned the studies pertaining to their line duties. They have performed no active line service and are rusty in what they knew previous to entering upon their four years' detail, and realize that another period of hard work and study is ahead of them before they can even win back their former efficiency as line officers. Meanwhile they are to the line much as they were to the department upon first entering it. So in each detailed officer returning to the line after four years' duty as a quartermaster the department has lost the benefit of his acquired experience and expertness, the line will lose service it needs while he requalifies himself for its duties, and the officer loses a hard-earned standing as a quartermaster and finds himself behind his fellows of the line who have not had staff details and so handicapped as to make catching up with

them and regaining the relative standing among them he had before his detail a discouraging and seemingly hopeless task.

The more important works upon which the department is now engaged are necessarily being carried on under the direction of officers of the old force of the department, as, for instance, the important construction work at Fort Mason, Cal., West Point, N. Y., operation of the important general depots like those of New York City, San Francisco, supervision of the army transport service, etc. When officers of this class shall be no longer available, it is anticipated that the greatest difficulty will be experienced in selecting those qualified to handle such work.

Under the present system, when the captains in the permanent corps become exhausted by promotion, selection of field officers will be necessary. By virtue of their grades, and consequent increased responsibility, they should possess to a correspondingly greater degree the technical knowledge that is so essential for efficient service by a captain and quartermaster, but the source from which officers so qualified can be drawn is not apparent.

In time of war when the Quartermaster's Department will, more than at any other time, require officers of zeal, experience, and efficiency, it is thought the greatest difficulty will be met in obtaining this class of officers, inasmuch as those of the type required will seek duty with troops in the line, for the greater opportunity offered to distinguish themselves and obtain high command.

### CHANGE DESIRABLE.

It is the opinion of this office that the efficiency of the Quartermaster's Department could be materially increased by limiting the detail system to the junior grade of officers, of which one-half should be permanently appointed to the department and the remainder detailed as at present, after such examination as will determine their fitness for service in the department. Details should be made from captains or first lieutenants of the line, the latter to have the rank and pay of captains while serving in the department. The field officers should be appointed to the department; vacancies in the grade of colonel and lieutenant-colonel to be filled by promotion, as at present, and in the grade of major by promotion of captains so long as any of the present corps remain and then by promotion of captains permanently appointed.

Technical knowledge of a high order is a necessary qualification in nearly every branch of the Quartermaster Department's work and the want of officers thus equipped in certain branches of its work is believed to be the weakest point in the personnel, and one which is being aggravated by the detail system each time an experienced and trained officer of the department or one who has served a four years' detail is replaced by one newly detailed, who in all probability brings from his experience with the line but a rudimentary knowledge of any one of the widely varying duties of the department.

### INSTRUCTIONS FOR QUARTERMASTERS.

The views of this office on the necessity for technical and expert knowledge on the part of officers have been heretofore officially

expressed; especially in the annual report for 1907, the following recommendation, which is still considered sound, was made, viz:

> The present excellent courses of study at the Infantry and Cavalry School and Staff College at Fort Leavenworth undoubtedly offer a very valuable and fundamental training for officers for service in the Quartermaster's Department. The course in engineering in the Infantry and Cavalry School and the practical exercise in performing staff duties involving details of transportation of large bodies of troops obtained in the military art exercises in the staff college furnishes a superior foundation of instruction for officers for service in this department. There is, however, an urgent need for officers specially trained in the construction of buildings, or water, sewer, and electric-lighting systems, the installation of modern heating apparatus; in textiles and leather, and the process of manufacture of clothing, hats, shoes, etc.; also in details of transportation by land and water. In addition, there should be general instructions to the administrative work of the department, and the preparation of papers pertaining thereto, especially contracts and bonds. It is hoped that some practical scheme may be devised for the selection and instruction at the service schools at Fort Leavenworth of a limited number of specially qualified officers with a view to their detail to fill vacancies in the Quartermaster's Department.

An officer of the Quartermaster's Department should be equipped with a thorough knowledge of office administration, a broad subject in itself, including that of chief quartermaster, depot quartermaster, and field quartermaster, as referred to in Army and Field Service Regulations, Quartermaster's Manual, and of the customs of the service, which only study and experience can bring. He must be equipped with a knowledge of the functions of the Quartermaster's Department with reference to the organization of troops, their shelter, and supply in the field and in garrison; with their transportation by land, and the various means thereof; of transportation by water; a thorough knowledge of animals, and a knowledge of the manufacture of clothing, including as it does the knowledge of textiles and dyes and methods; he should be master of questions relating to the construction of buildings, lighting, heating, and ventilation; of sanitary plumbing and the location, development, and construction of systems of water supply and sewerage; of the construction of roads, wharves, bridges, pavements, exterior lighting systems, steam engineering (both stationary and marine), and should have a technical knowledge upon numerous other subjects not hereinabove enumerated.

This wide field requires an officer to familiarize himself upon a great diversity of subjects, and in order to successfully fulfill the functions required of the department he must give his undivided time and attention and the full limit of his mental capacity to preparing himself to perform the duties which may fall upon him. The result is, that when or shortly after this has been accomplished, the detailed officer's tour of duty is at an end. It is known that many officers serving the four years' detail in the department, who have, by study and careful attention to their duty, rendered themselves efficient quartermasters, do not feel qualified to again take up their duties with the line. Their work as quartermasters has required their personal supervision and study, and they have not been able to keep up the studies pertaining to their position in the line. Their experience as quartermasters is valuable to this department, but of little use to them on return to the line. They would prefer to remain with the department, and it would prefer to have them do so.

Under the present system after a few more years all captains of the permanent establishment in the Quartermaster's Department will be absorbed by promotion or casualty, and there will remain in that

grade only officers detailed from the line. These will, at the expiration of their detail, return to their line duties, and knowing this must be, they naturally devote a considerable portion of their time and energy to keeping up the studies pertaining to such duties, to the disadvantage of those pertaining to the duties of the department in which detailed. While in theory their training and experience are still available to the Quartermaster's Department whenever needed, in practice it is found that in the majority of cases they do not become available for detail, whether by promotion to higher grade and command, especially required in their own regiment or corps, or from other causes.

### LEGISLATION DESIRED.

The foregoing is a fair and conservative statement of the conditions in and needs of the Quartermaster's Department as viewed by this office. If the department's duties are to be properly performed by its own officers the need for an increase in the number thereof is urgent, in fact, imperative. In case remedial legislation shall receive favorable consideration, the following is submitted as the draft of a bill intended to give the department the necessary force and proper organization:

### DRAFT OF BILL.

*AN ACT To increase the efficiency of the Quartermaster's Department of the United States Army.*

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That the Quartermaster's Department shall consist of one quartermaster-general with the rank of brigadier-general; ten quartermasters with the rank of colonel; eighteen quartermasters with the rank of lieutenant-colonel; thirty-seven quartermasters with the rank of major; one hundred and fifty quartermasters with the rank of captain; and two hundred and fifty post quartermaster-sergeants: *Provided*, That all vacancies in the grade of colonel, lieutenant-colonel, and major created or caused by this Act and hereafter occurring in said grades shall be filled by promotion according to seniority, as now prescribed by law. That to fill original vacancies in the grade of captain created by this Act in the Quartermaster's Department, the President is authorized to appoint officers from the army at large from the grade in which the vacancy exists or from the grade below.

SEC. 2. That details to the Quartermaster's Department under the provisions of the Act of February second, nineteen hundred and one, may be made from the army at large from the grade in which the vacancy exists, or from the grade below: *Provided*, That details to the Quartermaster's Department under the provisions of the said Act shall be limited to vacancies in the grade of captain; that the number so detailed to the grade of captain shall not exceed seventy-five; and that no officer shall be so detailed except upon the recommendation of a board of officers of the Quartermaster's Department, after at least one examination, which shall be open to competition: *Provided further*, That all vacancies in the grade of captain in excess of those to be filled by detail shall be filled by permanent appointment from the army at large from the grade of captain or first lieutenant, and that no officer shall be so appointed except upon the recommendation of a board of officers of the Quartermaster's Department, after at least one examination, which shall be open to competition: *Provided further*, That officers appointed to permanent commissions with the grade of captain shall rank from date of appointment.

### POST QUARTERMASTER-SERGEANTS.

Recommendation has heretofore been made for an increase of 50 in the number of post quartermaster-sergeants, the additional number to have the same rank, pay, and allowances as hospital sergeants of the first class. (See Quartermaster-General's annual report, 1907, p. 51; ibid., 1906, p. 48; ibid., 1905, p. 62.)

These noncommissioned staff officers are an important factor in the operations of the Quartermaster's Department. Wherever there are stores of quartermaster supplies to be kept and issued the services of one or more of these sergeants are needed. This means practically all permanent military posts and stations and many times at temporary ones. In field service the quartermaster of each division and brigade should have at his command such number of these sergeants as is required to act as storekeepers and assist in issuing supplies. Each general depot should have such number of them as can be used to advantage as storekeepers and in the distribution of supplies, generally from three to five. The present force is so occupied with other duties that but two are stationed at quartermaster depots. They are subject to army regulations and military discipline; have a clearly defined status in the military establishment, thus avoiding friction as to quarters, messing, etc., at isolated posts; and can be held to more certain accountability for trust and responsibility devolving upon them than can civilian employees and reduce the number required of such employees. The increased rank and pay for 50 sergeants is advocated because the importance and responsibility of the duties on which they are engaged warrant it, and at depots and important stations where several sergeants are on duty, to devolve upon the higher ranking one general supervision, under direction of the quartermaster, of the duties of the others. This would also give opportunity to reward those who now or may hereafter deserve it, and the possibility of promotion would have a good effect upon the subordinate sergeants.

There would be no increase of expense on account of an increase of the number of post quartermaster-sergeants recommended, as they would generally replace civilian employees now costing the Government more money than would the sergeants. The advantage would be in having men amenable to military discipline, already experienced in military methods and customs, and of ascertained integrity and ability is the result desired. To become eligible to appointment to these positions an enlisted man must have at least four years' service, have reached the grade of sergeant, and pass a prescribed examination. These regulations insure competent and trustworthy men to perform the important and responsible duties devolving upon them. With very few exceptions the post quartermaster-sergeants have proven intelligent, efficient, and trustworthy.

### GENERAL SERVICE CORPS.

In the Quartermaster-General's annual report for 1907 the establishment of a general service corps was discussed and recommended, as follows:

> This department has long realized that could it have at command an enlisted force of sufficient numerical strength it could in many respects more efficiently and economically administer its affairs and maintain better discipline than is possible with civilian employees. The men of such a corps would occupy a certain and determined position in the army; be without question subject to its laws and regulations, both as to their duties and their privileges, and the matter of selection, duties, quarters and rations furnished, separation from the service, etc., would be placed entirely upon a military basis. Nor is it believed serious difficulty would be encountered in selecting and enlisting competent and reliable men of the trades and callings required to form such a corps. It is well known that there are already to be found among the enlisted men of the army skilled mechanics and artisans, whose abilities are largely *utilized and* for which considerable sums are annually allowed them as extra-duty

pay. By transferring such men the nucleus of a most efficient corps could be formed, which there is little doubt could be so organized, developed, and distributed as in time to remove the necessity for any considerable number of civilian employees under normal conditions.

In time of war such a corps would be capable of expansion and its trained and skilled personnel be available for teaching new members their duties with the least possible delay. Most of the trouble heretofore experienced in securing qualified civilian employees in emergencies would be eliminated, especially where connected with transportation. Altogether, more efficient service would be secured for the outlay involved than is possible under the present practice. As an indication of what might be done in this respect the post quartermaster-sergeants are an instructive example. No better, more reliable, or competent body of men of like rank can be found, and their duties and responsibilities are by no means light. Recommendation for the establishment of such a corps, with outline for its organization, was made to the Secretary of War by my predecessor in a communication dated February 16, 1904, and in his annual report for 1904 it was renewed and the advantages of such an organization briefly discussed. Attention is invited to that discussion and also to the discussion of this subject by several department commanders in recent years, notably that of Brig. Gen. J. M. Lee, commanding the Department of Texas, for the fiscal year 1905.

In times of actual service there are certain civilian employees—for example, teamsters and packers—whose duties may and frequently do take them into the same positions of danger as troops, and to place all such on the same footing as enlisted men would be only fair to them, in addition to the advantages accruing to the service.

The establishment of such a corps for the department would, this office is convinced, remedy a recognized weakness in our military system, result in an actual saving of funds, and increase the efficiency of the enlisted men of the line by leaving all of them absolutely free to attend to purely military duties. While the pay of its members would have to be, for nearly all grades, higher than privates receive, the advantages of quarters, allowances, and prospective retirement would allow marked reductions from the salaries now paid civilians. There would also be eliminated much of the correspondence now necessary in making selections, transfers, separations, reporting the status, etc., of civilian employees in the classified service, effecting a saving in clerical work at posts and stations and in this office.

Since the adoption of the new rules for garrison and field training, practice marches and instruction camps, etc., little time is left enlisted men for extra duty. This condition has also increased the demand for civilian employees to perform many of the duties formerly done by enlisted men as extra duty. In the interests of efficiency, economy, discipline, and readiness for prompt action in emergency, this department considers the establishment of a general-service corps one of the most urgent needs to be met, and it is hoped provision therefor will be made during the coming session of Congress along the line of the bill introduced in the last, with a possible modification so as to recognize post electricians, enginemen, and stokers.

Since the foregoing was written the question of establishing a general service corps has been much discussed and considered officially. The unanimous opinion is that such a corps is needed and should be established. Some differences of minor importance exist as to details of organization and methods of administration, but it is generally agreed that such a corps would make for efficiency of the enlisted men by relieving them of extra and special duty, and many disagreeable and unsoldierly tasks, thus enabling all their time to be employed on military duties, and for efficiency of administration of the department by placing certain of its duties upon men subject to military rules and discipline. There appears to be no argument for or against the establishment of a general service corps that has not been already advanced and considered. All that is now lacking is legislation, which it is hoped may be obtained.

## PERSONNEL.

The personnel of the Quartermaster's Department comprises 96 commissioned officers, as follows: One brigadier-general, 6 colonels, 9 lieutenant-colonels, 20 majors, and 60 captains; 200 post quarter-

master sergeants, 200 enlisted men of the army general service detachment, West Point, and a large number of civilian employees distributed throughout the United States, insular possessions, and Cuba.

During the fiscal year 6 officers retired, 7 were relieved by expiration of detail, 1 before expiration of detail on account of physical disability, 1 for the good of the service, 1 on account of promotion, 1 declined after appointment, and 1 by resignation, making a total of 18 vacancies, 17 of which were filled by detail from the line as provided by law, leaving one vacancy on June 30, 1908.

In addition to the above regular force, there were on June 30, 1908, 51 officers of the line on duty in the department, by detail as acting quartermasters, in charge of construction work at the various posts, under the direction of the Quartermaster-General of the Army; 1 by detail as acting quartermaster, assistant to depot quartermaster; 3 by detail as acting quartermasters, assistants to chief quartermasters; and 14 in charge of transports and other duties; making a total of of 69 officers of the line detailed as acting quartermasters.

During the year 15 post quartermaster sergeants retired, 2 were discharged by expiration of term of enlistment, 1 by purchase, 1 appointed a Philippine scout, 1 was discharged for the convenience of the Government, and 2 died, making a total of 22 vacancies, which were filled by appointment of sergeants from the line.

## CLERICAL FORCE.

The need of an increase in the clerical force of this office has been explained in previous reports. The business of the office is gradually and naturally increasing and all indications are that its volume will never be less and may continue to increase. Business methods are kept up with modern commercial developments and the work simplified and so systematized as to require the fewest clerks possible. With all this, a great deal of overtime work and curtailment of annual leave is necessary.

Expression has heretofore been given to the views of this office on the subject of increased pay and the retirement with pay of employees. The basis upon which claim for increase of pay rests is the increased cost of living. Clerks are now paid according to a rating established nearly forty years ago and the reasons for revising and increasing this pertain as forcibly to clerks as to those officers and officials of the Government whose needs have been recognized and provided for. The $900 grade for clerks in this office should be abolished. It is only with great difficulty that competent men can be induced to accept employment at this rate and, as promotions are necessarily slow, the best of those accepting are difficult to retain.

*Office room.*—The rooms now at the disposal of this department in the War Department are totally inadequate for its needs. Their congested condition causes much inconvenience and greatly retards work. Some relief from this condition is needed, as until more room is provided the difficulties will increase.

Respectfully submitted.

J. B. ALESHIRE,
*Quartermaster-General, U. S. Army.*

The SECRETARY OF WAR.

# REPORT OF THE COMMISSARY-GENERAL.

# REPORT OF THE COMMISSARY-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE COMMISSARY-GENERAL,
*Washington, D. C., October 7, 1908.*

SIR: I have the honor to submit the following report of the operations of the subsistence department for the fiscal year ending June 30, 1908:

## RESOURCES, DISBURSEMENTS, AND BALANCES.

The following statement exhibits the aggregate fiscal resources and disbursements of the department and the balances at the close of the fiscal year 1908:

REPORT OF FINANCIAL TRANSACTIONS OF THE SUBSISTENCE DEPARTMENT DURING THE FISCAL YEAR ENDING JUNE 30, 1908.

*Appropriation, subsistence of the army, 1908.*

[Act March 2, 1907, 34 Stats., 1165.]

| | |
|---|---|
| **Resources:** | |
| Appropriation | $6,832,761.15 |
| Receipts | 3,172,040.33 |
| | 10,004,801.48 |
| Disbursements | 9,502,916.50 |
| Balance [a] | 501,884.98 |
| | 10,004,801.48 |

RECEIPTS.

| | |
|---|---|
| Sales to officers and enlisted men | 2,421,451.48 |
| Sales to civilian employees | 215,345.75 |
| Sales to officers and enlisted men, organized militia | 5,275.04 |
| Sales to bureaus and departments of the Government | 252,187.26 |
| Sales, miscellaneous | 10,227.58 |
| Collections, account errors, gains, reclamation, refundment | 5,767.73 |
| Meals on transports | 142,794.05 |
| Transportation collected | 1,230.78 |
| Transfer settlements made by Treasury Department account supplies furnished various bureaus and departments of the Government | 89,235.51 |
| Miscellaneous deposits made to credit of appropriation account paymasters' collections, etc | 28,525.15 |
| | 3,172,040.33 |

[a] This balance has been reduced more than half by indebtedness incurred on account of supplies purchased and services rendered in closing month of fiscal year, settlement for which was not made prior to June 30, 1908.

DISBURSEMENTS.

| | |
|---|---|
| Ration articles, including savings and other authorized issue articles purchased | $5,586,755.08 |
| Stewards' stores | 270,839.42 |
| Hot coffee for troops traveling | 15,509.93 |
| Meals for recruiting parties, etc | 284,288.00 |
| Sales stores | 2,018,379.99 |
| Cooking apparatus | 63,051.03 |
| Post bake ovens | 10,088.17 |
| Subsistence property | 96,176.36 |
| Commutation of rations to cadets, West Point | 43,080.30 |
| Commutation of rations to enlisted men | 566,943.97 |
| Commutation of fresh vegetables | 606.47 |
| Compensation of civilian employees, Subsistence Department | 264,839.19 |
| Compensation of civilian employees, transport service | 229,929.32 |
| Extra-duty pay to enlisted men | 32,780.99 |
| Printing, advertising, commercial newspapers, and use of telephones | 9,681.59 |
| Prizes to enlisted graduates of the army schools for bakers and cooks | 510.00 |
| Incidental expenses | 7,288.50 |
| Correction of errors and transportation turned over to Quartermaster's Department | 1,491.51 |
| Transfer settlements made in Treasury Department, account of supplies received from various departments of the Government | 676.68 |
| | 9,502,916.50 |

BALANCES.

| | |
|---|---|
| Amounts in Treasury to credit of Subsistence Department June 30, 1908 | 4,811.66 |
| Amounts to credit of officers in depositories and in personal possession June 30, 1908 | 497,073.32 |
| | 501,884.98 |

*Appropriation subsistence of the army, 1907.*

[Act June 12, 1906, 34 Stats., 249.]

| | |
|---|---|
| Resources: | |
| Balance reported June 30, 1907 | 739,655.52 |
| Additional balance not previously reported | 2,460.52 |
| Receipts | 23,150.52 |
| | 765,266.56 |
| Disbursements | 135,997.97 |
| Balance | 629,268.59 |
| | 765,266.56 |

RECEIPTS.

| | |
|---|---|
| Amounts collected from various sources by Treasury Department | 9,905.39 |
| Miscellaneous deposits account of sales, etc., in Treasury Department | 6,791.78 |
| Sales to officers and enlisted men | 3,203.97 |
| Collections account errors, gains, reclamation, and refundments | 3,249.38 |
| | 23,150.52 |

DISBURSEMENTS.

| | |
|---|---|
| Ration articles, including savings and other authorized issue articles purchased | 58,007.69 |
| Hot coffee for troops traveling | 38.64 |
| Meals for recruiting parties | 4,872.37 |
| Sales stores | 32,081.24 |
| *Subsistence property* | 19,082.23 |

| | |
|---|---|
| Commutation of rations to cadets, West Point | $3,907.50 |
| Commutation of rations to enlisted men | 12,224.32 |
| Compensation of civilian employees, Subsistence Department | 725.43 |
| Compensation of civilian employees, transport service | 135.75 |
| Extra-duty pay, enlisted men | 5.60 |
| Printing, advertising, commercial newspapers, and use of telephones | 1,055.86 |
| Incidental expenses | 22.96 |
| Correction of errors | 542.99 |
| Settlements made by Treasury Department | 3,295.39 |
| | 135,997.97 |

BALANCES.

| | |
|---|---|
| Amounts in Treasury to credit of Subsistence Department June 30, 1908 | 629,196.28 |
| Amount to credit of officers in depositories and in personal possession June 30, 1908 | 72.31 |
| | 629,268.59 |

*Appropriation, subsistence of the Army, 1906.*

[Act March 2, 1905, 33 Stats., 833.]

| | |
|---|---|
| Resources: | |
| Balance, June 30, 1907 | $459,705.44 |
| Receipts | 2,231.33 |
| | 461,936.77 |
| Disbursements | 687.44 |
| Amount carried to surplus fund by Treasury Department, June 30, 1908 | 461,249.33 |
| | 461,936.77 |

RECEIPTS.

| | |
|---|---|
| Amounts collected from various sources by Treasury Department | 1,425.28 |
| Collections, account sales, reclamations, etc | 44.55 |
| Miscellaneous deposits | 761.50 |
| | 2,231.33 |

DISBURSEMENTS.

| | |
|---|---|
| Settlements made by Treasury Department | 673.42 |
| Commutation of rations to enlisted men | 12.00 |
| Correction of errors | .02 |
| Meal tickets, enlisted men | 2.00 |
| | 687.44 |

*Appropriation for replacing military stores at San Francisco, 1906–7.*

[Act June 30, 1906, 34 Stats., 645.]

| | |
|---|---|
| Resources: | |
| Balance allotment June 30, 1907 | $235,019.41 |
| Transferred by Treasury Department to general fund June 26, 1908 | 235,019.41 |

*Appropriation for the relief of sufferers from earthquake, etc., on the Pacific coast.*

[Joint resolutions approved April 19, 21, and 24, 1906, 34 Stats., 827, 828.]

| | |
|---|---|
| Resources: | |
| Balance allotment June 30, 1907 | $25,073.32 |
| Transferred by Treasury Department to general fund June 26, 1908 | 25,073.32 |

*Appropriation, encampment and maneuvers organized militia, 1908.*

[Act March 2, 1907, 34 Stats., 1164.]

RESOURCES.

| | |
|---|---|
| Allotment of appropriation made by Secretary of War | $71,000.00 |
| Receipts | 1.90 |
| | 71,001.90 |
| Disbursed | 37,753.82 |
| Balance allotment | 33,248.08 |
| | 71,001.90 |

RECEIPTS.

| | |
|---|---|
| Correction of errors | .25 |
| Reclamation | .75 |
| Treasury receipts | .90 |
| | 1.90 |

DISBURSEMENTS.

| | |
|---|---|
| Ration articles, including savings and other authorized issue articles purchased | 15,149.92 |
| Hot coffee for troops traveling | 449.63 |
| Meals while traveling | 3,506.29 |
| Commutation of rations to enlisted men | 46.90 |
| Transfer settlements made in Treasury Department | 18,601.08 |
| | 37,753.82 |

BALANCES.

| | |
|---|---|
| Amount of allotment in Treasury June 30, 1908 | 589.19 |
| Amounts to credit of officers in depositories and in personal possession June 30, 1908 | 32,658.89 |
| | 33,248.08 |

*Appropriation, organized militia, 1907.*

[Act June 12, 1906, 34 Stats., 249.]

| | |
|---|---|
| Resources: | |
| Balance allotment June 30, 1907 | 22,004.50 |
| Settlements made by Treasury Department | 2,649.63 |
| Transferred by Treasury Department to general fund June 26, 1908 | 19,354.87 |
| | 22,004.50 |

## THE UNITED STATES ARMY TRANSPORT SERVICE.

DEBITS.

| | |
|---|---|
| Salaries of civilian employees and board wages (including employees of office of subsistence superintendent in work pertaining to the transport service) | $233,865.91 |
| Cost of foods furnished in the several messes | 560,985.62 |
| Commutation of rations to patients in hospital | 7,278.80 |
| Value of ice dropped as wastage | 9,290.62 |
| Losses on stores due to deterioration | 1,498.51 |
| Losses on property | 91.53 |
| Value of property expended | 1,408.65 |
| | 814,419.64 |

CREDITS.

| | |
|---|---|
| Cash collections for meals | $142,488.50 |
| Amounts paid and collectible on account of meals furnished bureaus and departments of the Government | 25,493.99 |
| Miscellaneous sales | 1,018.47 |
| Gains in stores | 87.92 |
| Credit given for additional cost of unusual expenditures in transport service on account of Cuban expedition | 42,565.04 |
| Credit given for value of issues to troops, civilian employees, and general prisoners | 129,788.77 |
| | 341,442.69 |

SUMMATION.

| | |
|---|---|
| Total debits | 814,419.64 |
| Total credits | 341,442.69 |
| Net cost | 472,976.95 |

STATEMENT OF ISSUES MADE DURING FISCAL YEAR 1908.

| | | |
|---|---|---|
| Garrison, field, travel, haversack, and emergency rations (22,728,623)[a] | | $4,092,301.55 |
| Filipino rations issued (1,758,137) average cost 13.91 cents[a] | | 244,470.35 |
| Articles other than ration articles issued | | 41,907.40 |
| Ice issued | | 67,272.60 |
| Recruit kits issued | | 55,607.57 |
| Gratuitous issues to destitutes, etc | | 593.04 |
| Issues to Indian prisoners of war | | 9,922.53 |
| Total value of issues | | 4,512,075.04 |
| Garrison, field, travel, haversack, and emergency rations issued in the United States in May and June, 1908 (increased rations): | | |
| Number | 2,838,425 | |
| Value | $557,572.01 | |
| Average cost, cents | 19.65 | |
| Garrison, field, travel, and emergency rations issued for army during year, omitting only the rations issued in the United States in May and June, 1908 (old rations): | | |
| Number | 19,890,198 | |
| Value | $3,534,729.54 | |
| Average cost, cents | 17.77 | |

*Losses.*

DEBITS.

| | |
|---|---|
| Ordinary wastage and losses in issue and transportation | $27,570.86 |
| Deterioration of stores from climatic causes, etc | 30,512.29 |
| Theft | 287.12 |
| Fire | 230.46 |
| Property expended and worn out in the government service[b] | 20,364.89 |
| Total debits | 78,965.62 |

[a] Value of issues to troops, $4,057,577.33; to civilian employees, $176,798.43; to general prisoners, $102,396.14.

[b] This increase over the 1907 report is attributable to the expense incident to the supply of field cooking apparatus and bake ovens heretofore supplied by the Quartermaster's Department.

CREDITS.

| | | |
|---|---|---|
| Reclamations made from carriers and contractors | $3,951.51 | |
| Receipts from sales at auction of deteriorated supplies | 2,243.93 | |
| Gains (account issues) | 4,252.39 | |
| Total credits | | $10,447.83 |
| Net losses | | 68,517.79 |

The losses above referred to occurred in territorial divisions as follows:

| | |
|---|---|
| United States | $22,890.92 |
| Philippines | 40,416.16 |
| Alaska | 3,693.13 |
| Transports | 1,590.04 |
| Hawaii | 354.09 |
| Cuba | 9,610.83 |
| Porto Rico | 410.45 |
| Total | 78,965.62 |

POST COMMISSARY SERGEANTS.

The number of post commissary sergeants in the service during the fiscal year was as follows:

| | | |
|---|---|---|
| In service July 1, 1907 | | 200 |
| Appointed during the year | | 7 |
| Total | | 207 |
| Separations: | | |
| Retired | 5 | |
| Discharged | 4 | |
| | | 9 |
| In service on June 30, 1908 | | 198 |

CLERICAL FORCE.

Congress at its last session made provision for an increase of one clerk of class IV and a decrease of one clerk of the $900 class in this office. One clerk each of classes IV, III, and II were estimated for, but only the former allowed. In this connection it is but just to state that this bureau has a lower percentage of higher grade clerks and a lower average salary than any other bureau of the War Department in which the character of work performed is closely related to that in this bureau. As it is now, clerks who hold responsible positions and perform onerous duty are not adequately compensated. Below is a table which shows the number of clerks, percentage in each class, and average salary of various bureaus of the War Department which perform work closely allied to this bureau.

*Number clerks and percentage in each class for fiscal year 1909, with average salary.*

| Office. | Clerks. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $2,000 class. | | Fourth class. | | Third class. | | Second class. | |
| | Number. | Per cent. | Number. | Per cent. | Number. | Per cent. | Number. | Per cent. |
| Commissary-General | | | 4 | 6.89 | 5 | 8.62 | 5 | 8.62 |
| Paymaster-General | | | 6 | 12.00 | 7 | 14.00 | 12 | 24.00 |
| Chief of Ordnance | | | 5 | 8.33 | 6 | 10.00 | 11 | 18.33 |
| Quartermaster-General | 2 | 1.22 | 9 | 5.48 | 12 | 7.31 | 26 | 15.85 |
| Surgeon-General | | | 13 | 13.68 | 11 | 11.57 | 26 | 27.36 |

| Office. | Clerks. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | First class. | | $1,000. | | $900. | | Total number of clerks. | Average salary. |
| | Number. | Per cent. | Number. | Per cent. | Number. | Per cent. | | |
| Commissary-General | 20 | 34.48 | 16 | 27.58 | 8 | 13.79 | 58 | $1,196+ |
| Paymaster-General | 11 | 22.00 | 5 | 10.00 | 9 | 18.00 | 50 | 1,302 |
| Chief of Ordnance | 26 | 43.33 | 8 | 13.33 | 4 | 6.66 | 60 | 1,280 |
| Quartermaster-General | 61 | 37.19 | 40 | 24.40 | 14 | 8.53 | 164 | 1,229+ |
| Surgeon-General | 32 | 33.68 | 10 | 10.52 | 3 | 3.15 | 95 | 1,352+ |

## PHILIPPINES DIVISION.

Supplies for the Philippines were mainly furnished from the United States, and only stores procured in the islands that could be obtained to advantage. The stores furnished were of good quality with few complaints, but every effort is made to avoid legitimate cause for complaint.

Fresh meat of excellent quality was procured as in the past from Australia. The price of frozen fresh beef was 8 cents per pound and fresh mutton 7 cents per pound.

Fresh vegetables were supplied from the United States, Australia, and Japan. Potatoes ranged from $2.15 to $2.40 per hundred pounds and onions from $2.10 to $2.50 per hundred pounds. Out of 6,854,370 pounds of fresh vegetables received during the year there was a loss on them of only $2,380.44, which is a commendable showing.

The storehouses are mainly frame buildings one board thick, and the heat beating on the exterior intensifies the interior heat. This constant heat is injurious to food supplies and is a fruitful source of loss in the Philippines.

Bakery buildings at the posts are of a temporary character and for this reason no brick ovens have been installed, but a portable or semi-permanent type of oven used.

## CUBA.

The chief commissary of Cuba states that the troops have been supplied, as heretofore, with ample rations and sales stores almost without exception of excellent quality; that the increase of the ration effective May 1 has given general satisfaction, and that with intelli-

gent supervision and a good cook all reasonable demands are satisfied. The average monthly sales were $8,055.54, and the monthly issues averaged 49,520 rations during the year.

An itemized account has been kept of all expenditures additional to those which would have been necessary if the force comprising the army of Cuban pacification had been stationed in this country. The amount so expended up to June 30, 1908, including the expense incident to the operation of the stewards' department on the transports exclusively engaged in the supply of these troops, is $400,772.46.

### THE NEW RATION.

The issue of the new ration, established by Executive order of March 5, 1908, was commenced on the first of the following May, as directed by General Orders, 46, War Department, April 21, 1908.

The garrison ration prescribed therein seems to fully meet the needs of the service and to give general satisfaction, so far as reports have been received, and to amply justify the judgment of the Secretary of War in providing such a ration, which means so much in the way of health and comfort to the soldier.

The garrison ration was increased in some elements and reduced in others, the changes affording a greater variety, which can be still further increased under the provision which authorizes savings to be made on all components, thereby permitting additional articles to be procured with the proceeds of the savings.

The field ration was left practically as it existed originally.

The haversack ration was added to meet requirements when troops are serving under war conditions or in the field where transportation is limited. It is recognized that it is impossible to always give a complete ration under such conditions, owing to the lack of transportation and because such impedimenta tend to impair to a greater or less degree an army's mobility. Upon this ration soldiers can subsist and maintain bodily vigor for a considerable period, but in order not to deprive them of the benefits of an ample and nourishing ration provision is made, in cases where through the exigencies of the service they have subsisted on the haversack ration, to make issues to them in kind of specified articles of subsistence stores of money value equal to the difference in price between the haversack rations issued and used by such troops and the price of the same number of garrison rations. Such issue is to be made only when necessary for the health and comfort of the troops, and to be independent of and in addition to the ration issues being made, but not to be ordered after sixty days from the last date on which troops were subsisted on the haversack ration, and under no circumstances is there to be any commutation or savings on the additional articles of stores issued.

### BAKE OVENS AND RANGES.

Ever since last year, when the Secretary of War sanctioned the transfer of cooking apparatus in the field and when traveling, and bake ovens and apparatus pertaining thereto, experiments have been proceeding to perfect a knock-down field oven and a field range suited to the needs of the army. Various types of ovens and ranges have been *designed* and experimented with by army officers during the past

year. In developing the desired types the aim has been to combine simplicity, durability, minimum of weight, facility for setting up and dismantling, fuel saving, minimum of labor in operation, and ease of transportation.

From among the different kinds tried out it is thought that a satisfactory type of field bake oven and a field range have been developed. The oven is what is known as a continuous baker, and the range is particularly adapted to pack transportation. It is expected, after some further test, to have an ample supply of these ovens and ranges constructed and distributed where the needs of the army require.

### FIRELESS COOKING.

One hundred fireless cookers were constructed by the Ordnance Department at Rock Island Arsenal for the Subsistence Department, and these cookers were distributed to various organizations of the army for an exhaustive test in the field. They were tried out on the march, on bivouac, and in maneuver camps, and so far as reports have been received have proved highly satisfactory, with the addition of slight changes suggested by actual experience, and which can be readily made. Some criticism has been made on the subject of adopting the fireless cooker, on account of its weight, as a part of the company field outfit.

The inspector-general of the maneuver camp recently held at Pine Plains, N. Y., in his report remarked concerning the cooker that "The one in use by the Twenty-fourth Infantry during the encampment was a joy to the men of the organization and an object of envy to all observers." The chief surgeon of the maneuver camp at Pine Plains said that the fireless cooker "is believed to be of great value, and by its use coffee, stimulants, broths, and food can be prepared at the permanent camps and served hot to the advanced stations, such as dressing and ambulance stations, recruits on bivouac, etc." The United States Marine Corps procured, through the Subsistence Department, six of the cookers of the army pattern and thoroughly tested them at the Norfolk Navy-Yard, for the purpose of providing warm food for the guard there, and were pleased with the result of the experiment, which was in every way successful.

These cookers designed by the Subsistence Department combine lightness of weight with stability of construction, and are intended to stand long travel on rough roads and assure the perfection of the contents at the end of the journey. This method of cooking will insure hot meals of excellent quality on the march, on bivouac, or on the firing line, save expense and labor, and largely contribute to the health and comfort of the troops.

### KITCHEN CARS.

Upon consultation and discussion with the Pullman Company, of Chicago, on the subject of kitchen cars, that company expressed a willingness to construct or modify its tourist kitchen car in such a fashion as to meet the requirements of the army, and also expressed a willingness to operate, as far as practicable, a sufficient number of these tourist kitchen cars to meet the needs of the army. In a recent trial test of one of them from Jefferson Barracks to San Francisco it was found to meet expectations with the addition of a slight change,

which the Pullman Company agreed to make. This latest development of the kitchen car will add greatly to the welfare of the soldier, as the conditions existing in the past when troops traveled were onerous and at times entailed downright hardship; but with the addition of this car troops can travel with comfort, save time on long journeys, and effect a decided economy, as the garrison ration, which is much cheaper than the travel ration, is to be issued instead of the latter. In times of war or emergency these cars can be used for hospital purposes or in connection with the Red Cross.

### TRAINING SCHOOLS FOR BAKERS AND COOKS.

Commendable progress has been made during the past year by Capt. L. R. Holbrook, commissary, who completely reorganized the Training School for Bakers and Cooks at Fort Riley, Kans., of which he is in charge. The students of the school have had the benefit of actual experience as well as instruction, have been carefully tested at frequent intervals, and can be safely accepted on the qualifications as shown by their certificates. A new course was planned for officers and progress has been highly satisfactory. It consists of a twenty days' course in mess management and ten days' instruction in baking, aided by lectures and practical demonstrations in bakery and kitchen.

I concur in the remarks of Brig. Gen. John B. Kerr, U. S. Army, commandant of the Mounted Service School, Fort Riley, Kans., in his report of August 31, 1908, in which he states that officers need training in intelligent mess economy and kitchen supervision rather than in actual cooking; in bakery administration, bread issues, and accounts rather than in the mere kneading of the dough.

Since the establishment of the training schools for bakers and cooks at Fort Riley, Kans.; Washington Barracks, D. C., and the Presidio of San Francisco, Cal., 302 bakers and 599 cooks have been graduated. Of this total, 124 bakers and 307 cooks were graduated during the fiscal year 1908 and 178 bakers and 292 cooks during the previous year. The number graduated at the different schools was as follows: At Fort Riley, Kans., 46 bakers and 141 cooks during the present year and 118 bakers and 162 cooks during the previous years. At Washington Barracks, D. C., 31 bakers and 86 cooks during the present year and 16 bakers and 45 cooks during the previous years. At Presidio of San Francisco, Cal., 47 bakers and 80 cooks during the present year and 44 bakers and 85 cooks during the previous years. The total number of officers who have graduated from the schools at Fort Riley, Kans., is 19.

### RATIONS FOR OFFICERS AND CIVILIAN EMPLOYEES SERVING IN THE FIELD.

I again renew my recommendation that officers and civilian employees serving in the field be allowed one ration each per day. Under present conditions no provision is made for the subsistence of officers ordered into the field—and usually hurriedly—when all their time and attention should be given to their military duties. If rations were furnished them in the field, it would then be unnecessary to take along a large list of sales stores, overtaxing transportation and hampering to that extent the mobility of the troops, labor would be saved in handling such stores, there would be fewer for deterioration

or loss, the matter of accountability would be greatly simplified, and the whole arrangement would be more on a business and fighting basis. It would require the authority of law to make issues of rations to officers, and it is hoped that the Secretary of War will give the matter favorable consideration and bring it to the attention of Congress.

### SERVICE CORPS.

I earnestly renew my recommendation for the organization of a service corps in the army. A bill for the creation of such a corps in the service was introduced in the first session of the Fifty-ninth Congress, on January 30, 1906 (S. 3926). The duty of such a corps would be to perform the work of the Subsistence and Quartermaster's departments, such as is done now by soldiers of the line detailed on extra or special duty. Such a corps would do away with extra and special duty details from the line of the army for work in the departments mentioned, and provide a special corps for this work, of permanent, trained men, whose services would not be taken away at a critical time when most needed. Detailed men can not give satisfactory service, under existing conditions, as soldiers or render full service in the staff department for which detailed. It is believed that no other organization could be provided which would so largely increase the efficiency of the service in time of war and tend to increase the contentment of the men in time of peace as the establishment of a service corps.

### NEW SUBSISTENCE MANUAL.

A new edition of the Subsistence Manual was authorized under date of April 17, 1908. A new edition was essential owing to the multiplicity of changes which modified the manual of 1902. A revision was especially desirable on account of the militia, who found it difficult to distinguish between that part of the old manual which was still in force and that which was obsolete or amended. The revision brings the manual up to date in every respect, and makes it easier, not only for commissaries of militia, but those of the Regular Army, to perform subsistence duty.

### MILITIA.

During July, 1907, joint army and militia seacoast defense exercises were held in the departments of the East, the Gulf, California, and the Columbia, and joint encampments in June, 1908, in the departments of the East and the Gulf. There is nothing more important than to teach the militia how to do their duty in the field, and the instruction obtained at the maneuver camps affords the greatest benefit to the militia. The work of the supply departments in these camps is of the kind that would be had in active service in the field, and officers should have practical training in such important field work. At present militia officers do not generally fully understand how to acquire stores and property, care for them, issue them, and account for same. Instruction should not only be given in joint camps with the Regulars, but also when the militia are in their own state camps, and a valuable aid also is to be found in lectures by army officers before militia associations and meetings.

Commissary officers of the army have been called upon by the militia of various States to lecture before their associations and meetings. In compliance with a request of the Interstate National Guard Association, of Columbia, S. C., for an officer to read a paper on the subject of subsistence, an officer of the subsistence department was selected and detailed last year for that duty. During the present year, upon request of the Rhode Island National Guard, another officer of the department was detailed to deliver a lecture on the subject of subsistence before that body at Providence. Upon the invitation of the First Brigade School for Cooks, of Philadelphia, an officer of the department was designated to proceed to Philadelphia to deliver a lecture before that organization.

## SUPPLY DEPARTMENTS OF EUROPEAN ARMIES.

Under authority of the Secretary of War, dated May 10, 1907, I proceeded abroad last summer to investigate the supply departments of the British, French, and German armies, and below are my remarks on the subject. It may be proper to say in this connection that every facility was afforded and every courtesy shown me by the officials of the various countries visited.

### 1. SUPPLY SYSTEM OF THE BRITISH ARMY.

The quartermaster general's department of the British army has charge of the organization and training of all transport, remount, and supply services; settling reserves of food, clothing, equipment, general stores and material to be held in depots, garrisons; and mobilization stores, the scales of such articles to be in possession of the troops; holding and issuing all military stores; administration of the transport, remount, railway, supply, ordnance, and veterinary services; selection of officers for employment in the above services, and the arrangement for the execution of postal services in war.

In order to carry out these duties this department is organized into divisions and subdivisions as indicated below:

1. Director of movements and quartering, which includes the subdivisions of (*a*) quartering, (*b*) movements, (*c*) railways.

2. Director of transports and remounts, which includes the subdivisions of (*a*) remount, (*b*) transport, (*c*) veterinary.

3. Director of supplies, which includes the subsistence subdivision. This is the division with which my investigations were especially connected.

The duties of this division consist of the following: Supply of food, forage, paillasse straw, fuel, light, disinfectants, and water; consideration of inventions relating to defense, and of supply arrangements in connection with same; separation and colonial allowances; maintenance of main reserves; revision of regulations for supply, transport, and barrack services; local regulations for allowances abroad of food, etc.; superintending the maintenance of reserves at the supply reserve depot, and preparation of estimates for the above services.

4. Director of equipment and ordnance stores, which includes the following subdivisions: (*a*) Clothing, etc., (*b*) personnel, (*c*) general service equipment, supply and patterns of stores, and (*d*) mobilization equipment, etc.

In addition to these subdivisions of the quartermaster-general's office, there are also subdivisions entitled "Financial" and "Contract," the duties of which subdivisions seem sufficiently indicated by their titles.

The adjutant-general, chief of staff, quartermaster-general, and master-general of ordnance are selected by the secretary of state for war, subject to the approval of the King, and retain their appointments at his pleasure. These officers are members of the army council, together with some civilians. This body selects the directors of transport and supplies from among the colonels, the selection being limited to that grade, the term of appointment being four years, at the end of which time they may be reappointed or return to the rank of colonel, and if not assigned to duty are placed upon the retired list on half pay.

The army service corps of the British army performs all the duties of (1) the supply division, which includes subsistence, and (2) the transport division of the army, each of these two branches constituting, as indicated above, a division of the quartermaster-general's department.

The army service corps is organized in the same manner as the other corps of the British army. The number of officers in the corps is 458, divided as follows: Twenty-two lieutenant-colonels, 50 majors, 149 captains, 128 lieutenants, 38 second lieutenants, 64 quartermasters, 3 inspectors of mechanical transport, 4 riding masters.

Promotions are made as vacancies occur, but in the absence of vacancies second lieutenants are promoted after 3 years' service, and lieutenants after ten years.

Retirement for age is as follows: Lieutenant-colonels at 55 years, or after five years' employment in such grade; majors at 48 years, captains at 40 years.

The department is recruited as follows:

1. By applicants from the cavalry, infantry, and artillery, with less than two years' service, who are taken on probation for a year, and then if they pass a successful examination are permanently assigned to the corps.

2. By candidates from Sandhurst, who graduate at once into the corps.

3. By candidates from the university and candidates from the militia, who pass a qualifying examination for the army and are then given their selection of either the line or the army service corps, as vacancies occur. All of these officers after successfully completing their probationary period are permanently assigned to the army service corps.

All officers on joining this corps are obliged to go through the various schools established for the training of the officers of the corps, irrespective of the source from which the officer comes. In the first place, a young officer who joins direct from Sandhurst, the militia, or a university has to go through a six months' course of drill and regimental duties at Woolwich; he then takes another six months' course at the supply and transport school of instruction at Aldershot. Officers who come from the line of the army are exempted, however, from the six months' course of instruction at Woolwich and pass direct to the training school at Aldershot.

The course of instruction at the Aldershot school for army-service corps officers includes a course for the junior officers and a course for the senior officers. The term for the former commences from the 1st of April, and for the latter in October. It requires one year to complete both courses. In the course of instruction for senior officers there is included what is known as "staff rides." The officers are taken out under the senior instructor of the school to certain sections of the country, in which it is supposed a hostile force is operating, and the officers under instruction are obliged to prepare a scheme for the supply of the troops operating in that theater, which includes the problems of transportation, location of remount stations, depots of supplies, the provisioning of such depots, and an estimate of the supplies which can be obtained from local resources, means to be taken to accumulate these supplies at the depots, and the methods to be adopted to forward supplies from depots.

Having been permanently admitted to the corps, officers are later obliged to take the various courses of instruction for the officers of the corps, which consist of a short course under a medical officer of health at the abattoirs at Birkenhead. A certificate obtained there enables an officer, under the law, to fine a meat contractor a sum not in excess of £10 for any deliveries of meat not up to the conditions of the contract.

There is also a course for senior officers at the Royal Sanitary Institute in London, which includes instruction pertaining to foods of all kinds. This is the same course as that taken by the inspectors employed under the local government board.

Then there is a five-months' course at the Aldershot school of instruction for captains in administrative duties.

In addition to the above a course has lately been instituted at the London School of Economics and Political Science for instruction in business methods. The curriculum of each of the schools was obtained, but is not inserted here.

There are 6,287 enlisted men, including warrant officers and noncommissioned officers. Of this number 1,911 are supply men attached permanently for that work, but they may be assigned to transport work in case of necessity. The officers are assigned to either of the two divisions of the work of the corps. A certain number of noncommissioned officers and men of the supply division of

the army service corps are trained in the army service corps school of instruction at Aldershot in field bakery and field butchery, and also in shorthand and typewriting.

Officers of the army service corps, in common with other officers of the army, compete for entrance to the staff college, and if successful undergo a two-years' course of training in staff work, and after graduation from the college are available for assignment to duty on the general staff.

The general staff has no supervision over the work of the quartermaster-general's department, the functions of the general staff being confined to questions of military defense, collection of information, supervision of the training of the military forces for use in war, war organization, education of officers, selection and administration of the general staff, telegraphing, and signaling.

The director of supplies, as well as the directors of transports and remounts, handles all matters connected with his own particular department. Under the supervision of the quartermaster-general both are directly under the secretary of war, but the director of each department has supreme control of all the affairs assigned to his department and drafts all regulations necessary for the execution of such duties.

The rations supplied to the British army vary according to the locality in which the troops are serving. At home the soldier gets 1 pound of bread and three-fourths pound of meat daily, and in addition receives a money allowance of 3d. per diem to provide groceries, vegetables, etc. These latter articles are usually provided regimentally through the canteen.

Abroad the soldier receives 1 pound of meat and 1 pound of bread and, with the exception of stations in the Mediterranean and West Indies, receives a grocery and vegetable ration in addition to the mess allowance of 3d. per diem. The grocery ration varys slightly at different stations, but the following is a fair sample: One-half ounce of tea, 2 ounces of sugar, one-half ounce of salt, one thirty-sixth ounce of pepper, 1 pound fresh vegetables.

As a general rule, all supplies are purchased under contract and are accounted for monthly by the supply officer. The supplies are obtained by the troops on a daily form of indent signed by the commanding officer of the regiment, which indent is rendered for battalions or regiments. On active service a daily indent is rendered by every regiment and corps. This is the only return rendered by the units on active service, the supply officer compiling from this indent a statement of receipts, issues, and remains, which he closes monthly; but, under a recent order, in the future no accounts are to be rendered by supply officers in the field, the only account then required being made by the officer in charge of the depot.

The troops are messed either by companies or squads, sometimes by double companies, and recently trial has been made of messing troops by battalions.

As a rule, one cook is allowed to each company, though assistants are assigned to him, depending upon the strength of the mess. The number of cooks employed, however, is purely a regimental arrangement. The cooks are not paid any extra-duty pay, but as compensation for their services they are allowed to draw their money allowance of 3d. per diem for messing and to mess free with their company.

In garrison suitable cooking appliances are provided.

On field service the troops, as a rule, mess by companies, but there is considerable latitude, and frequently the companies are broken up into squads of 10 or 12 men. The only cooking appliance allowed for field service consists of a camp kettle. About five of these kettles are allowed to a company, and they are carried in the ordinary transport wagon or on pack animals. A fire is made in an open trench.

To provide fresh bread for troops in the field a bakery column is organized for each division.

The field bakery column of a division consists of four sections, each section consisting of eight ovens (one for each brigade and one for division headquarters), with the necessary bakery appliances. The field oven in use in the British army is what is known as the "Aldershot ground oven." It is a knock-down oven, which can be readily packed in a wagon.

### 2. SUPPLY SYSTEM OF THE FRENCH ARMY.

In France the minister of war is responsible for the administration of the army.

*The administration* of the army comprises the following services: *Artillery, engineers, intendance,* powder, saltpeter, and sanitary departments; also a

treasury and post-office. These two latter services are under special regulations made with the approval of the minister of these different branches of the civil government.

The services above enumerated are divided into (*a*) direction, (*b*) execution, and (*c*) control, each division being independent of the others.

The subject of this report has special reference to the service de l'intendance, which corps includes the services of pay, military subsistence, clothing, camp equipment, horse equipment for the cavalry, transports, beds and furniture, the examination of accounts connected with this service, various other duties connected with the verification and auditing of the accounts forwarded from the army corps, administration of the personnel not attached to troops, and pensions.

The personnel of the corps de l'intendance includes 315 officers, as follows:

4 Intendants généraux, corresponding to major-general.
24 Intendants militaires, corresponding to brigadier-general.
62 Sous-intendants militaires de la 1re classe (colonels).
87 Sous-intendants militaires de la 2me classe (lieutenant-colonel).
95 Sous-intendants militaires de la 3me classe (major).
43 Adjoints à l'intendance (captain).

315

The duty of these officers pertains entirely to the direction of the service.

The second division, which is the corps d'administration, includes 425 officers, as follows:

21 Officers d'administration principaux (majors).
170 Officers d'administration de la 1re classe (captains).
234 Officers d'administration de la 2me et 3me class (lieutenants and sublieutenants).

425

These officers have charge of the execution of the work of the intendance under the direction of the officers of intendance.

Promotion is partly by seniority and partly by selection up to and including the grade of sous-intendants militaires de la 3me classe (major); by selection entirely, starting from the grade of sous-intendants militaires de la 2me classe (lieutenant-colonel). Briefly, the law provides that promotion by selection shall be made in the following manner: An officer must serve a certain number of years in each grade, at the end of that time he can be recommended for promotion. He can not be promoted until he is so recommended—that is, until he has completed the years of service required in his particular grade, nor can he be promoted when recommended unless he stands above the middle on the efficiency list of the officers of his grade. To illustrate, a sous-intendant of the second class must serve two years in that grade; he can then be recommended for promotion, and may be selected, provided he stands above 43 on the list of efficiency of the officers of that grade, there being 87.

All officers can be retired when they have completed thirty years of service, or they may be placed upon the retired list by limit of age under the following conditions:

*Intendance.*—Intendants generaux, 65 years; intendants militaires, 62 years; sous-intendants militaries de la 1re classe, 60 years; sous-intendants militaires de la 2me classe, 58 years; sous-intendants militaires de la 3me classe, 56 years; adjoints à l'intendants, 53 years.

*Administration.*—Officers d'administration principaux, 60 years; officers d'administration de la 1re classe, 58 years; officers d'administration de la 2me classe, 56 years.

The officers of the intendance are recruited from the officers of all branches of the service, and from the officers of all the administrative services having the grade of captain or a corresponding grade. The officers of administration of military subsistence, as well as officers of administration of other services, are recruited from the noncommissioned officers of all arms of the service. This recruitment from the officers of the army for the corps de l'intendance and from administrative officers is made after severe competitive examination. All officers of proper grade who desire to compete make official applicati[on] the proper channels; the generals commanding army corps satisfy[themselves] that the applicants are qualified for entrance to the intendanc[e]

application, and the candidates are then given an examination, written and oral, so as to show their qualifications for the service.

The subjects upon which the candidates are examined are described in "Instructions issued from the minister of war in conformity with a decree of 14 February, 1905."

The successful candidates attend a school of instruction held at the Invalides, under the Comité Technique de l'Intendance. The graduates of this school who are permanently assigned to the corps de l'intendance enter the lowest grade, adjoint à l'intendance, and are promoted in the manner briefly outlined above.

In regard to the matter of promotion it should be noted that up to and including the grade of sous-intendant of the second class, one fifth of the vacancies each year are given to officers of the line of the army who pass an examination showing themselves qualified to perform the duties of the corps de l'intendance. Should there not be sufficient officers of the line pass to fill this one-fifth number of vacancies, the promotions are made from the corps de l'intendance. Promotions above the grade of sous-intendant, second class (lieutenant-colonel), are made from the corps de l'intendance itself. The officers of administration are recruited from the noncommissioned officers of all arms of the service, who after competition successfully complete the course at the Ecole d'Administration at Vincennes.

The number of enlisted men of the administrative service of all grades assigned to an army corps varies according to the effective strength and importance of the army corps. Their grades are as follows: Adjutant, sergent-major, sergent-fourrier, sergent, caporal, soldat.

There are 8,400 in the department in time of peace, and in time of war the number amounts to about 50,000. Arrangements are made for the retirement of the men after a certain number of years' service.

The organization of the French army being by army corps, there is assigned to each army corps one or more officers of the corps de l'intendance and of the corps de l'administration. In each army corps an intendant militaire has entire control, under the orders of the general commanding, of all the work connected with the corps de l'intendance. All the sous-intendants militaires attached to the army corps are under the orders of the intendance directeur. Each of these sous-intendant has under his orders a certain number of officers of administration. The officers of administration in the territory of the army corps have charge of the various depots and bakeries established for that corps, under the direction of the officer de l'intendance.

Each regiment of infantry, battalion, foot battalion, regiment of cavalry, as well as the hospital service, herd of beef cattle, field bakery column, has an officer of various ranks designated officer d'approvissionment, whose duty it is to see about the supplies of his particular unit and who is a line officer from the particular command. There is in addition in each regiment a commission d'ordinaires, composed of officers of the regiment whose duty it is to provide certain of the supplies for the troops.

Officers of the corps de l'intendance are not assigned to the general staff, this corps and the general staff being both recruited from the line of the army by selection after very severe and thorough examinations, the officer entering the corps de l'intendance making that his career. The general staff exercises no administrative control over the duties assigned to the corps de l'intendance.

In time of war the intendant on the staff of a general commanding necessarily receives the general's instructions through the chief of staff, but the execution of the work of the intendance as far as the corps d'armée is concerned is attended to solely by the officer of the intendance.

The following stores comprise the ration: Bread, soup bread, dry vegetables or rice, lard, salt, sugar, coffee, meat, fresh or preserved; frequently potatoes and fresh vegetables are supplied, sometimes wine, and in exceptional circumstances brandy.

The weight of the components of the ration above given is slightly increased when in the field and varies according to circumstances.

The corps de l'intendance provides the bread either from their own bakery or under contract with civil bakers, the latter using the flour provided by the intendance or purchasing it themselves.

In garrison fresh meat is always bought for the troops by the commission ordinaire. Vegetables, sugar, and coffee are partly furnished by the intendance and partly by regimental commissions. The funds with which the commission *ordinaire* makes these purchases are derived from a daily allowance amounting *to about 50 centimes*, this allowance varying with the different localities and

upon the quantities of these articles furnished by the intendance. During maneuvers and in time of war the intendance furnishes all the supplies which the troops can not conveniently secure. When possible, even in active service, a certain allowance of money per diem is made for the purchase of groceries and fresh meat.

The supplies furnished by the intendance are purchased under contract and are accounted for by the officers of administration who make periodical returns to the proper authorities, the accounts being periodically examined by the officer of intendance attached to each army corps.

There is no man specially designated as a cook in a company. Each company commander details a sufficient number of men to cook the meals for the troop; the head cook is changed every three months and the others every fifteen days. They receive no additional pay, but each company commander can make a daily allowance to a cook not exceeding 50 centimes, which is charged against the funds allotted to the commission d'ordinaires.

In garrison permanent ranges are established in barracks. The cooking appliances in the field consist of a gamelle, coffee grinder, and marmite carried by every fourth man. Each man carries in addition a marmite, a water bottle, and an individual gamelle, and there is a folding water bucket for every eight men. No field ranges of any kind whatever are furnished, the cooking being done over fires in trenches, the men messing by groups.

There is a field bakery column attached to each army corps, all the ovens and equipment for same being concentrated at the headquarters of each army corps. The field bakery column consists of 32 rolling ovens for each army corps, 1 bakery wagon for each 2 ovens, and other necessary transportation to carry the additional implements and flour. Included among the implements carried are folding boxes, in which the bread is placed immediately upon being taken out of the oven, where it can cool while being forwarded to the various units. The oven is a double-deck oven, each deck holding 80 rations, and at least 10 batches per day can easily be baked. The oven weighs about 11,000 pounds, and the track is too wide for our country roads.

There are other types of field ovens, including one known as the "Godelle octagonal oven," invented by an officer of the corps d'administration. This oven can be mounted in ten minutes and dismounted in six minutes by skilled men, and will hold 300 rations of bread. It is not intended to accompany the troops, but for installation at depots on the line of communication.

### 3. SUPPLY SYSTEM OF THE GERMAN ARMY.

The German Emperor exercises supreme control over the army through the four following instrumentalities:

1. The military cabinet, charged with questions concerning the personnel of officers properly so called.
2. The general staff of the army, charged with the preparation for war.
3. The inspectors.
4. The war ministry.

The war ministry has no power whatever of command in the army. It has charge of all administrative matters connected with the army, and is divided into four departments, of which one is the department of administration, consisting of six sections, as follows:

1. The funds section carries on the general financial and audit business. It has charge of the budget, the general accountability, the verification of accounts, the general military treasury, and the personnel of the pay corps.
2. The subsistence section provides for the subsistence of the troops, the manufacture of preserved meats, preparation of statistics, and of measures to be taken in case of mobilization of the personnel of the subsistence service.
3. The clothing, pay, and transportation section is charged with all that concerns the service of clothing and accouterments, the pay of the reserves, traveling expenses, and transportation of the army.
4. The barrack section attends to garrison administration and is charged with the maintenance and administration of buildings.
5. The drill grounds section is concerned with the administration of drill grounds, maneuver camps, the damages done by maneuvers, etc.
6. The building section has charge of the technical part of the construction of buildings (except fortifications) and of the personnel intrusted therewith.

The personnel of the administrative services is divided into three classes: First, the superior officials; second, under officials; third, purely civil officials.

The first have the rank of an officer and wear uniform, but are not commissioned. The second are comprised largely of men who have the rank of noncommissioned officers. The third are civilians.

The German territory is divided into 22 army-corps districts, in which are stationed as a rule the troops comprising army corps. The commanding general of an army commands both the corps and the territory in which it is stationed. In addition, the commanding generals of army corps have considerable administrative authority formerly reserved for the war ministry. There is a corps intendant on the staff of each commanding general of an army corps, who acts as consulting or advising agent to the general in all administrative matters. The functions of the intendance resemble those of our pay, subsistence, and quartermaster's departments. The intendance is the intermediate authority between the war ministry and special subordinate supply departments. The intendants have a double relation: First, to the war ministry, and, secondly, to the troops and their commanders.

Each army corps intendance is divided into five sections, corresponding very nearly to the first four sections of the department of administration of the war ministry. The fifth is the hospital section.

The functions of the corps intendance includes the appointment of paymasters, the purchase of breadstuffs, the supervision of granaries and bakeries, the personal affairs of the officers of the supply departments, the procurement of the cloth and other articles needed for the clothing and equipment of the troops, as well as of the land, buildings, and utensils required for their comfort and shelter, the supervision of the administration of barracks and hospitals, cooperation in the administration of funds and property pertaining to the system of military education and training, to the technical institutes (artillery workshops, depots, etc.) of the artillery and engineer systems, and to the remount depots, affairs relating to the mobilization of the corps administrative departments, and to pensions; compensation to municipal authorities on account of quarters, subsistence, forage, and transportation furnished to troops; the military economic affairs of staffs, troops, nonregimental officers, and officials of the corps not attached to divisions, or who are not allotted to the divisional intendance. A chief constructor is assigned to each corps intendant, to whom all matters relating to building operations required to be dealt with by an expert are referred by the intendant to his immediate superior. The chief of each division (an intendance counselor or intendance assessor) is assisted by a number of clerks graded as intendance secretaries or assistant secretaries and intendance registrars or assistant registrars and ordinary clerks.

An intendance is also attached to each divisional headquarters which is subordinate to that of the corps, and occupies toward the division commander the same relation that exists between the corps intendance and the commanding general.

The sphere of duty of the division intendance includes matters relating to the pay, commutation of quarters, and travel allowances of divisional troops, nonregimental officers, and officials; the examination and settlement of property and money accounts, including the holding of unexpected inspections of the disbursing offices pertaining to the divisional troops; matters relating to the clothing and equipment of such troops; participation in the biennial musters; the subsistence of troops and reservists.

As regards the relation between commanding officers and the intendance, the following system prevails in the German army: The intendance is in general a responsible administrative organ in itself, but in the end it is bound by the decisions of the commander, and the intendants are therefore his subordinates. This makes military command paramount, and insures unity of action by giving to the commander the deciding voice in the event of disagreement between himself and the intendance, and enabling him to assume the responsibility in a particular case. Even though the responsibility be thus assumed by the commander, the intendance should inform the war ministry of cases of disagreement for his further protection, and to bring about, in case of need, a decision of principle.

There is also an intendance of military institutions at Berlin, organized as an army corps intendance, but subordinated exclusively to the minister. Its sphere of action comprises the administrative surveillance of authorities and institutions specially established at Berlin, the pay of officers without troops, the administrative supervision of the central administration of the ministry, and *of the establishments* depending directly therefrom.

The ration allowed consists of 750 grams of bread per diem, and an allowance of money amounting to 16 pfennig, which is furnished for the following: Three pfennig for breakfast, 3 pfennig for lard for the noon and evening meal, and 10 pfennig for vegetables. The department furnishes the bread and contracts are made for providing fresh meat.

In each battalion there is a commission appointed consisting of one officer, one noncommissioned officer as accountant, and several other noncommissioned officers and soldiers. Money for purchasing provisions is paid in advance, and record is kept by the accountant of the amount expended, and, monthly, this book of accounts of expenditures is forwarded to the pay branch, where it is properly audited.

The cooking in barracks is done in large boilers capable of cooking food for 250 men, and a small roasting oven which is used usually only on Sundays for cooking meats. Each man when the call for dinner is sounded brings his bowl, receives his portion from the cook, and after having purchased such beer as he desires (from the canteen), goes to the mess room to eat his meal.

Cooking is done for each battalion by one noncommissioned officer, who has two or three assistants detailed to help him. No extra compensation is given to cooks, but they get their rations without any deduction from their pay. In addition, there is in each barracks in time of peace a sergeants' mess, where a woman is employed to do the cooking (usually the wife of the sergeant in charge of the mess), who receives all meals free and pay of about 30 marks per month. In the field each man does his own cooking in the can which he carries attached to his knapsack. Some cavalry and artillery organizations are provided with large kettles which they carry in their wagon trains.

The bread furnished the troops in garrison is provided from about 89 different bakeries located throughout the empire. In the field bread is provided from field-bakery columns attached to each army corps. A bakery column consists of two sections, each of 10 ovens, and one wagon is allowed for each oven, with one additional for each section, making 20 ovens and 24 wagons for each field-bakery column.

In the German army the wagon train is a separate branch and is immediately under the control of the commanding general of the corps; therefore, at each one of the headquarters of the 23 corps, including the garde corps, there are train depots.

The officials of the intendance in each army corps, and those stationed in Berlin in connection with the great general staff, work out plans of supply during supposititious war campaigns, very similar to the method described by Col. Von François, who was formerly chief of staff of the fourth army corps, in his book, entitled "Supply Service in the Field."

Respectfully submitted:

HENRY G. SHARPE,
*Commissary-General.*

The SECRETARY OF WAR.

# REPORT OF THE SURGEON-GENERAL.

# REPORT OF THE SURGEON-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE SURGEON-GENERAL,
*Washington, September 14, 1908.*

SIR: I have the honor to submit herewith a report upon the work of the Medical Department of the Army, beginning with a financial statement for the fiscal year ending June 30, 1908, and including a study of the health and sanitary conditions of the Army for the calendar year 1907.

## FINANCIAL STATEMENT, 1908.[a]

*Medical and hospital department, 1908.*

| | | |
|---|---|---|
| Appropriated by act approved March 2, 1907 | | $644,286.00 |
| Proceeds of private laundry work done for sanitary reasons at the Medical Department steam laundry, Manila, P. I. | [b]$2,445.40 | |
| Transfer to this head made by the Treasury Department on account of army medical supplies furnished to the Immigration Service (subsequently retransferred to the proper head, "Replacing medical supplies, 1908–9," as per counter entry below) | 359.92 | |
| Transfers to this head made by the Treasury Department to correct disbursing errors, from "Medical and hospital department, 1907" | 65.93 | |
| Other refundments during the year | 551.72 | |
| | | 3,422.97 |
| Total to be accounted for | | 647,708.97 |
| Disbursed during the year: | | |
| Expenses of medical-supply depots | 752.05 | |
| Medical and hospital supplies | 397,072.97 | |
| Medical attendance and medicines (except at recruiting stations) | 11,694.33 | |
| Medical expenses of recruiting (including medical attendance and medicines at recruiting stations) | 11,841.20 | |
| Pay of nurses | 1,267.50 | |
| Pay of other employees | 154,794.59 | |
| Laundering of hospital linen | 30,153.64 | |
| Expressage | 125.81 | |
| Notary fees | 43.36 | |
| Telephone service, Medical Department steam laundry, Manila | 30.00 | |
| Gas and electricity for medical apparatus | 292.22 | |
| | | 608,067.67 |
| Transfer by Treasury settlement to "Replacing medical supplies, 1908–9," being counter transfer to correct error above shown | | 359.92 |

[a] The disbursements in this statement include settlements with public creditors made by the accounting officers of the Treasury, and charged by them to these appropriations.

[b] These proceeds are in course of transfer to "Miscellaneous receipts," under a decision made by the Comptroller of the Treasury on July 7, 1908, and are not available for disbursement.

| | | |
|---|---|---|
| Balances on hand June 30, 1908: | | |
| In United States Treasury and in transit thereto | $13,046.62 | |
| In hands of disbursing officers— | | |
| New York City | 10,505.89 | |
| Washington, D. C | 7,698.21 | |
| St. Louis, Mo | 2,193.91 | |
| San Francisco, Cal | 590.39 | |
| Habana, Cuba | 575.98 | |
| Manila, P. I | 4,670.38 | |
| | | $39,281.38 |
| Total accounted for | | 647,708.97 |

*Medical and hospital department, 1907.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907, act of June 12, 1906 | | [a] $47,490.29 |
| Refundments during the year (including transfers to this head from "Medical and hospital department, 1906," to correct disbursing errors, $112) | | 130.49 |
| Total to be accounted for | | 47,620.78 |
| Disbursed during the year: | | |
| Expenses of medical supply depots | $129.65 | |
| Medical and hospital supplies | 30,297.71 | |
| Medical attendance and medicines (except at recruiting stations) | 3,108.33 | |
| Medical expenses of recruiting (including medical attendance and medicines at recruiting stations) | 1,253.39 | |
| Pay of nurses | 100.00 | |
| Pay of other employees | 8,893.96 | |
| Laundering of hospital linen | 2,493.05 | |
| Expressage | 22.40 | |
| Notary fees | 2.28 | |
| Gas and electricity for medical apparatus | 35.30 | |
| | | 46,336.07 |
| Transfers by Treasury settlements to correct disbursing errors: | | |
| To "Medical and hospital department, 1908" | 65.93 | |
| To "Medical and hospital department, 1906" | 56.00 | |
| | | 121.93 |
| Balances on hand June 30, 1908: | | |
| In United States Treasury | 739.90 | |
| In hands of disbursing officer, Washington, D. C | 422.88 | |
| | | 1,162.78 |
| Total accounted for | | 47,620.78 |

*Medical and hospital department, 1906.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907, act of March 2, 1905 | | $6,751.93 |
| Refundments during the year (including transfers to this head from "Medical and hospital department, 1907," to correct disbursing errors, $56) | | 63.70 |
| Total to be accounted for | | 6,815.63 |
| Disbursed during the year: | | |
| Medical and hospital supplies | $1,366.29 | |
| Medical attendance and medicines (not at recruiting stations) | 62.00 | |
| | | 1,428.29 |

[a] In my last annual report the balance under this appropriation, while complete to June 30, 1907, at all other places, was brought up only to May 31 at Manila. The balance reported in this wise for May 31 and June 30 was $50,244.20. Disbursements at Manila during June, 1907, were $2,753.91, leaving a final balance of $47,490.29 on *June 30, 1907.*

| | | |
|---|---|---|
| Transfers by Treasury settlements to "Medical and hospital department, 1907," to correct disbursing errors | | $112.00 |
| Balance in United States Treasury June 30, 1908, for surplus fund [a] | | 5,275.34 |
| Total accounted for | | 6,815.63 |

*Medical and hospital department, 1905 and prior years.*

| | | |
|---|---|---|
| Refundments during the year (proceeds of private laundry work done for sanitary reasons at the Medical Department steam laundry, Manila, P. I., prior to July 1, 1905) | | $2,399.59 |
| Balance in United States Treasury June 30, 1908, for surplus fund | | 2,399.59 |

*Medical and hospital department, certified claims.*

| | | |
|---|---|---|
| Appropriated by act approved May 30, 1908 | | $7.50 |
| Disbursed during the year | | 7.50 |

*Replacing medical supplies, 1908–9 (act June 12, 1906—34 Stats., 256).*

| | | |
|---|---|---|
| Amounts accruing to this fund: | | |
| A. On account of supplies transferred— | | |
| To Immigration Service | $1,261.05 | |
| To Forest Service | 85.00 | |
| To Navy | 3,094.30 | |
| To Engineer Department, U. S. Army | .85 | |
| To Quartermaster's Department, U. S. Army | 381.67 | |
| To Isthmian Canal Commission | 10,139.33 | |
| To States and Territories for use of militia | 14,309.75 | |
| | | $29,271.95 |
| B. On account of supplies sold— | | |
| To States for use of militia | 902.62 | |
| To civil government, Philippine Islands | 481.38 | |
| To civilian employees and civilians | 1,891.46 | |
| | | 3,275.46 |
| C. On account of collections from carriers and others for medical property lost or destroyed | | 480.45 |
| D. On account of laundering by the Medical Department for the Engineer Department, U. S. Army | | 1.54 |
| Total to be accounted for | | 33,029.40 |
| Balance on hand in United States Treasury June 30, 1908 | | 33,029.40 |

*Replacing medical supplies, 1907–8.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907 | | $49,636.05 |
| Amounts accruing to this fund: | | |
| A. On account of supplies transferred— | | |
| To Immigration Service | $1,252.32 | |
| To Bureau of Education | 5.25 | |
| To Navy and Marine Corps | 496.86 | |
| To Quartermaster's Department, U. S. Army | 4.47 | |
| To Isthmian Canal Commission | 7,312.78 | |
| To States and Territories for use of militia | 463.98 | |
| | | 9,535.66 |
| B. On account of supplies sold to civilian employees and civilians | | 400.82 |
| C. On account of collections from carriers and others for medical property lost or destroyed | | 1,359.53 |
| Total to be accounted for | | 60,932.06 |
| Disbursed during the year | | 58,658.70 |
| Balances on hand June 30, 1908: | | |
| In hands of disbursing officer, Washington, D. C. | $1,775.65 | |
| In hands of disbursing officer, New York, N. Y. | 497.71 | |
| | | 2,273.36 |
| Total accounted for | | 60,932.06 |

[a] At date of this compilation, August 25, 1908, the surplus-fund warrant for June 30, 1908, has not been received for note in the Surgeon-General's Office.

*Field medical equipment.*

| | | |
|---|---|---|
| Appropriated by act approved May 11, 1908 | | $200,000.00 |
| Balance in United States Treasury June 30, 1908 | | 200,000.00 |

*Artificial limbs, 1908.*

| | | |
|---|---|---|
| Appropriated by act approved March 4, 1907 | | $120,000.00 |
| Disbursed during the year | | 96,939.44 |
| Balances on hand June 30, 1908: | | |
| In United States Treasury | $19,948.56 | |
| In hands of disbursing officer, Washington, D. C. | 3,112.00 | |
| | | 23,060.56 |

*Artificial limbs, 1907.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907, act of June 30, 1906 | | $15,329.52 |
| Disbursed during the year | | 5,208.96 |
| Balance on hand June 30, 1908, in United States Treasury | | 10,120.56 |

*Artificial limbs, 1906.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907, act of March 3, 1905 | | $18,417.52 |
| Disbursed during the year | | 196.47 |
| Balance in United States Treasury June 30, 1908, for surplus fund | | 18,221.05 |

*Appliances for disabled soldiers, 1908.*

| | | |
|---|---|---|
| Appropriated by act approved March 4, 1907 | | $2,000.00 |
| Disbursed during the year | | 1,213.76 |
| Balances on hand June 30, 1908: | | |
| In United States Treasury | $500.00 | |
| In hands of disbursing officer, Washington, D. C | 286.24 | |
| | | 786.24 |

*Appliances for disabled soldiers, 1907.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907, act of June 30, 1906 | | $830.21 |
| Disbursed during the year | | 73.60 |
| Balance in United States Treasury June 30, 1908 | | 756.61 |

*Appliances for disabled soldiers, 1906.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907, act of March 3, 1905 | | $633.06 |
| Balance in United States Treasury June 30, 1908, for surplus fund | | 633.06 |

*Army Medical Museum, 1908.*

| | | |
|---|---|---|
| Appropriated by act approved March 2, 1907 | | $5,000.00 |
| Disbursed during the year | | 3,410.42 |
| Balances on hand June 30, 1908: | | |
| In United States Treasury | $1,240.95 | |
| In hands of disbursing officer, Washington, D. C. | 348.63 | |
| | | 1,589.58 |

*Army Medical Museum, 1907.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907, act of June 12, 1906 | | $1,789.65 |
| Disbursed during the year | | 1,780.12 |
| Balance in United States Treasury June 30, 1908 | | 9.53 |

*Army Medical Museum, 1906.*

| | |
|---|---|
| Balance on hand July 1, 1907, act of March 2, 1905 | $33.59 |
| Balance in United States Treasury June 30, 1908, for surplus fund | 33.59 |

*Library, Surgeon-General's Office, 1908.*

| | | |
|---|---|---|
| Appropriated by act approved March 2, 1907 | | $10,000.00 |
| Disbursed during the year | | 5,839.84 |
| Balances on hand June 30, 1908: | | |
| In United States Treasury | $2,000.00 | |
| In hands of disbursing officer, Washington, D. C. | 2,160.16 | |
| | | 4,160.16 |

*Library, Surgeon-General's Office, 1907.*

| | |
|---|---|
| Balance on hand July 1, 1907, act of June 12, 1906 | $3,267.55 |
| Disbursed during the year | 3,058.57 |
| Balance in United States Treasury June 30, 1908 | 208.98 |

*Library, Surgeon-General's Office, 1906.*

| | |
|---|---|
| Balance on hand July 1, 1907, act of March 2, 1905 | $355.29 |
| Disbursed during the year | 15.25 |
| Balance in United States Treasury, June 30, 1908, for surplus fund | 340.04 |

*Furnishing trusses to disabled soldiers (secs. 1176, 1177, and 1178, R. S., and act of Mar. 3, 1879).*

| | |
|---|---|
| Balance on hand July 1, 1907 | $1,093.07 |
| Drawn during the year | 6,003.00 |
| Total to be accounted for | 7,096.07 |
| Disbursed during the year | 4,595.70 |
| Balance in hands of disbursing officer, Washington, D. C., June 30, 1908 | 2,500.37 |
| Total accounted for | 7,096.07 |

*General summary of all appropriations.*

| | |
|---|---|
| Balances on hand July 1, 1907 | $145,627.73 |
| Appropriated | 987,296.50 |
| Proceeds of sales, etc., accruing to replacing funds, act June 12, 1906 (34 Stats., 256) | 44,325.41 |
| Refunded during the year | 5,422.90 |
| Total to be accounted for | 1,182,672.54 |
| Disbursed | 836,830.36 |
| Balances in United States Treasury June 30, 1908, for surplus fund | 26,902.67 |
| Balances on hand for disbursement June 30, 1908 | 318,939.51 |
| Total accounted for | 1,182,672.54 |

## THE ARMY.

Troops were stationed in the United States proper, the Philippine Islands, Alaska, Cuba, and Hawaii during the past year, while native troops served in Porto Rico and the Philippines.

Statistics for the native troops—Porto Rican and Filipino—have been separately compiled, and when reference is made to the "Army" in this report the American Army proper, white and colored troops, is meant.

As in many diseases, notably the venereal and malarial, the same soldier is often admitted several times on account of the same case of illness, the total number of admissions is necessarily considerably greater than the actual number of cases. The extent of this discrepancy was 7.09 per cent.

## HEALTH OF THE ARMY.

The mean enlisted strength of the Army, American troops, white and colored, for the year 1907, as reported on the monthly sick reports of the Medical Department, was 53,803, and on the returns of The Adjutant-General's office 54,949. The former represents the strength of the commands from which the sick returns were made and was used in calculating all ratios except those for deaths and discharges. As all deaths and discharges were reported, even of those absent from a command, the total strength as obtained from The Adjutant-General was used in calculating ratios pertaining to those headings.

The total number of admissions to sick report was 65,546, equal to an admission rate of 1,218.26, compared with 1,276.88 for the previous year and 1,773.86 for the period from 1898 to 1905.

There were 319 deaths from all causes, equivalent to a rate of 5.81 per 1,000 of strength, compared with 6.11 and 13.91 per 1,000, the corresponding rates for the previous year and the period from 1898 to 1905, respectively.

The death rate for disease, 3.44, is slightly higher than for 1906, 3.28, but is lower than for any other year since 1897.

Eleven hundred and seven men were discharged for disability, equivalent to a rate of 20.15, as compared with 26.00 for 1906 and 23.43 for the period 1898 to 1905.

The constantly noneffective rate, 46.17, was considerably better than that for 1906, 49.79.

Venereal diseases were again by far the most important item affecting the efficiency of the Army. During the year the admission rate, 196.62, was even higher than for last year, but the noneffective rate, 12.43, was slightly lower. There were constantly on sick report for this class of diseases 668.65 men.

Next after venereal diseases in order of admission rates were malarial fevers. This class of diseases, however, shows a great improvement over the rates for the preceding year, the figures being as follows: Admissions 1906, 107.67; 1907, 63.19.

Next in order of importance were diarrhea and enteritis with an admission rate of 49.26, little more than half that for 1906; bronchitis, acute and chronic, with a rate of 47.43, slightly higher than for last year; and influenza, 40.46, about two and one-half times the rate for the preceding year.

The most important causes of deaths from disease were tuberculosis, ratio 0.53; pneumonia, 0.44; cerebro-spinal fever, 0.38; typhoid fever, 0.29; and heart disease, 0.27. All these ratios are higher than for 1906 except that for tuberculosis, which is considerably lower.

Tuberculosis led as a cause of discharge for disability with a ratio of 3.22; venereal disease was second, ratio 2.76; and insanity third, ratio 1.44.

There were 154 admissions for gunshot wounds, with 34 deaths, and *2,832* admissions for wounds other than gunshot, with 6 deaths.

No enlisted men were killed in action during the year; one was wounded, but recovered. Thirty-nine men were drowned, 12 per cent of the deaths from all causes. There were 26 suicides, as compared with 39 in 1906, but the number of homicides in the same period increased from 9 to 17.

If we look back over the figures representing the health of the Army (diseases only) for the past twenty years, it will be seen that they can be broadly grouped into two periods of ten years each, the ten years before and the ten years after and including the Spanish-American war.

With slight fluctuations there was a practically continuous improvement in all the rates year by year during the first period, the minimum discharge for disability rate of 6.81 being attained in 1895, the minimum admission and noneffective rates of 830.65 and 25.23 in 1896, the minimum death rate of 3.14 in 1897.

In 1898, the year of the war, there was a great increase in all the rates, except discharge for disability, largely the result of the undue prevalence of malarial fevers, typhoid fever, and yellow fever. Since 1898 there has been a gradual reduction in the admission and death rates, the former being now a little more than one-half that of 1898, and the latter a little more than one-seventh. The discharge rate, while higher than for the war period, is considerably lower than for any year since 1901. The noneffective rate is also lower than for any year since 1898.

The principal factors in the increased noneffective and discharge rates following the Spanish war were the increases in venereal (two and one-half times), in tuberculosis (four times), in malaria (one and one-half times), in dysentery (twelve and one-half times) and in diarrhea (nearly twice); in all these diseases except tuberculosis the increase may be accounted for by tropical service; in the case of tuberculosis it is probably due to several factors, among which the most important are inferior character of recruits and overcrowding in barracks, though tropical service must also be included.

The great improvement in the sickness and mortality rates since 1898–99 has been principally in the group of preventable diseases, except tuberculosis and venereal. The admission rate for typhoid fever in 1907 was 3.87, the lowest of which there is any record in this office; the rate for 1906 was 6.15 and for the eight-year period 1898–1905 it was 15.65. The admission rate for malaria, also the lowest of which there is record, was 63.19, as compared with 107.67 for 1906 and 346.64 for the period 1898–1905.

The marked fall in the admission rate for typhoid is particularly gratifying, as this is the disease which in time of war most seriously threatens the efficiency of the Army. The infection is so widespread among the civilian population of the United States that cases will inevitably occur among soldiers from time to time; but strenuous efforts are being constantly made to prevent its spread. The history of numerous outbreaks in the Army shows that under service conditions contagion, direct or mediate, is the most important factor, and the measures of suppression which are proving so successful have kept this method of spread constantly in view. Upon request of this office the Army Regulations have been so amended as to specifically provide that all soldiers must thoroughly wash their hands after going

to the latrines and before each meal. In time of war the difficulties in the way of controlling the factors concerned in the spread of the disease become so great that some foreign armies are endeavoring to render their soldiers immune to typhoid by means of antityphoid vaccination. A considerable measure of success has attended experiments along this line, and this office is now carefully investigating the matter to see if the method can be applied to advantage in our service.

The great improvement in the rates for malaria is also very satisfactory and fully justifies the expense which has been incurred in screening, and antimosquito methods; the reduction in the sickness from malaria in the last year alone amounted to 2,390 admissions.

On the other hand, the conditions as regard to tuberculosis are unsatisfactory. While there has been a slight reduction in the rates since 1906, yet this disease in 1907 caused 18 per cent of all discharges for disability, 15 per cent of all deaths, and 6½ per cent of the total noneffective rate for disease.

The rates for tuberculosis are considerably higher for colored than for white troops, and for troops serving in the Philippines than for those serving in the United States.

In a number of instances there have been well-marked company outbreaks of the disease pointing strongly to local infection. Thus an outbreak which occurred at Camp Connell, Samar, caused 16 cases in 8 companies of the First Infantry between January 3 and December 1, 1907. The surgeon at that post reported that those companies that brought infection with them from the United States produced about 80 per cent of the cases, and that the infection spread through personal contact. That the infection was from within the regiment would seem to be proven by the fact that the Fourteenth Infantry served at the post for about two years before the arrival of the First Infantry, and had only two cases of tuberculosis, both probably infected in the United States. To combat this disease in the Army greater care will have to be exercised in the future (1) to exclude recruits who have tuberculosis in its earlier stages; (2) to prevent overcrowding in barracks and guardhouses; (3) to detect cases in the command early and remove them before they have had time to infect others; (4) to practice the most thorough disinfection after removal of each case.

All the deaths and discharges which occurred in the United States of troops invalided home from foreign service and whose organizations remained abroad have been assigned to the country from which the soldiers were invalided. There yet remains, however, a large number of deaths and discharges which can only be assigned to the place where they occur, though the diseases which led to these terminations were contracted in foreign service.

Disease only being considered, Alaska had, as usual, the lowest admission and constantly noneffective rates.

Hawaii had no deaths, and admission and constantly noneffective rates second only to those of Alaska.

Cuba was third with admission, death and noneffective rates all better than those of the United States.

The Philippine Islands had, as usual, higher rates than any other country where United States troops are serving.

## OFFICERS. [a]

The mean strength of officers was 3,477 as obtained from the return of the Medical Department and 3,710 from The Adjutant-General.

There were 2,090 admissions, 11 deaths, and 102.08 constantly noneffective from all causes, equal to ratios of 601.09, 2.96, and 23.36; these rates are considerably lower than for last year, and lower than for any year since statistics have been compiled separately for officers.

The principal causes of admission in the order of their importance were influenza 64.71, diarrhea and enteritis 37.69, malarial fevers 33.36, and bronchitis 31.93.

Chronic nephritis caused 2 deaths; no other disease caused more than 1 death. There were 3 deaths from accident.

## INFLUENCE OF ARM OF SERVICE.

In these comparisons the enlisted men of the ordnance department are not considered on account of their small number and the special character of their services.

The admission rate was highest in the cavalry and lowest in the hospital corps; the death rate was highest in the cavalry and lowest in the field artillery.

Considering the special diseases the infantry had the highest admission rates for pneumonia and for syphilis; the cavalry had the highest admission rate for gonorrhea; the coast artillery had the highest admission rates for alcoholism and for acute bronchitis, and the lowest admission rates for dysentery and for typhoid fever; the field artillery had the highest admission rates for malaria and for chancroid, and the lowest for alcoholism, hernia, and tuberculosis; the engineers had the highest admission rates for hernia and for typhoid fever; the signal corps had the lowest admission rate for malaria; the hospital corps had the highest admission rates for dysentery and for tuberculosis and the lowest for acute bronchitis, pneumonia, gonorrhea, syphilis, and chancroid.

The general admission and death rates by arms of service vary considerably from year to year, but the liability to special diseases, as shown above, undergoes but little change.

## INFLUENCE OF RACE.

All the rates except that for discharges for disability were higher for colored than for white troops, the death rate being almost twice as great.

## COMPARISON WITH FOREIGN ARMIES.

A comparison has been made of all the data available in the annexes of the annual reports of the medical departments of the armies of the respective countries. The latest reports received have been used in each case, and every effort made to secure accuracy; but there are so many factors concerned which are peculiar to each country that too much importance must not be attached to the results.

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[a] American officers of the Porto Rican Regiment and Philippine Scouts are included in the statement.

It will be noted that the death and noneffective rates are higher in the United States Army than in any other, and the admission rate higher than in any other except the Dutch army, while the discharge for disability and total loss rates are much lower than for any other army except the British and Belgian.

As regards special diseases, the admission rates for alcoholism and venereal diseases are much higher in the American Army than in any other, except that for syphilis the British Army has a rate almost double that of ours. The rate for malaria is higher than for any other army except the British and Spanish; the rate for tuberculosis is lower than that of a number of armies, but more than twice as great as the rates of Great Britain and Prussia. Typhoid fever gives a lower admission rate than in the British and French armies, but a considerably higher rate than that of Prussia.

## SURGICAL OPERATIONS.

In 3,009 operations there were only 41 failures and 21 deaths. Of the 21 deaths none appear to have been the result of the operation nor of the use of an anæsthetic. Three deaths followed 30 operations for abscess of the liver, 2 followed 142 operations for appendicitis, 2 were the result of tetanus following operations for severe injuries.

There were 150 operations for hernia, all successful and with no mortality.

Twenty-five operations were done under spinal anæsthesia, including 10 for hemorrhoids and 3 for hernia.

## RECRUITING.

The wisdom and efficiency of the plan by which all enlistments and reenlistments were discontinued at the general recruiting stations (except the reenlistment of members of recruiting parties) and which requires that enlistment shall only be made at depots and depot posts after examination by a medical officer of the Army have been further demonstrated during the past year. As was to be expected the greatest influence of the regulation has been to materially lessen the discharge for disability rate and to eliminate the many complaints as to the unsatisfactory character from a physical standpoint of the assigned recruits under the old system of recruiting.

The first table shows the number of applicants for enlistment, white and colored, examined physically during the year 1907 by medical officers, with the number accepted and rejected and the number who declined enlistment, with ratios per thousand:

TABLE A.

| | White. | | Colored. | | Total. | |
|---|---|---|---|---|---|---|
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Examined by medical officers | 32,199 | 1,000.00 | 1,665 | 1,000.00 | 33,864 | 1,000.00 |
| Accepted by medical officers | 28,531 | 886.08 | 1,483 | 890.69 | 30,014 | 886.31 |
| By first enlistment | 16,925 | 525.64 | 531 | 318.92 | 17,456 | 515.47 |
| By all other enlistments | 11,606 | 360.44 | 952 | 571.77 | 12,558 | 370.84 |
| Rejected by medical officers [a] | 2,948 | 91.56 | 162 | 97.30 | 3,110 | 91.84 |
| Declined | 720 | 22.36 | 20 | 12.01 | 740 | 21.85 |

[a] One hundred and twenty-seven rejections by medical officers for causes not physical are not included in

The large increase in the percentage of accepted recruits, 88.63 per cent as against 70.6 per cent in 1906 and 66.5 per cent in 1905, is due to the fact that nearly all the applicants who came before medical officers were picked men who had already passed the scrutiny of the recruiting officers. The number of rejections by recruiting officers is not known to this office.

Table B shows the nativity of the accepted applicants for enlistment for the year. The proportion of foreign-born white recruits was slightly in excess of that for last year, 141.07 compared with 139.71 per 1,000, respectively. The relative number from the different foreign countries was about as usual:

TABLE B.

| Country. | White. | | Colored. | | Total. | |
|---|---|---|---|---|---|---|
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| United States | 24,506 | 858.93 | 1,483 | 1,000.00 | 25,989 | 865.90 |
| Germany | 875 | 30.67 | | | 875 | 29.15 |
| Ireland | 694 | 24.32 | | | 694 | 23.12 |
| England | 476 | 16.68 | | | 476 | 15.86 |
| Russia | 413 | 14.48 | | | 413 | 13.76 |
| Austria | 349 | 12.23 | | | 349 | 11.63 |
| Scandinavia | 298 | 10.45 | | | 298 | 9.93 |
| Canada | 284 | 9.95 | | | 284 | 9.46 |
| Hungary | 124 | 4.35 | | | 124 | 4.13 |
| Denmark | 105 | 3.68 | | | 105 | 3.50 |
| Italy | 102 | 3.58 | | | 102 | 3.40 |
| Scotland | 78 | 2.73 | | | 78 | 2.60 |
| Switzerland | 66 | 2.31 | | | 66 | 2.20 |
| Holland | 34 | 1.19 | | | 34 | 1.13 |
| France | 22 | .77 | | | 22 | .73 |
| Spain | 11 | .39 | | | 11 | .37 |
| Cuba | 2 | .07 | | | 2 | .07 |
| Others | 92 | 3.22 | | | 92 | 3.06 |
| Total foreign | 4,025 | 141.07 | | | 4,025 | 134.10 |
| Grand total | 28,531 | 1,000.00 | 1,483 | 1,000.00 | 30,014 | 1,000.00 |

Forty-six and seventy-three hundredths per cent of the white recruits were 5 feet 8 inches or over and only 8.32 per cent under 5 feet 4 inches, compared with 43.26 and 1.42 per cent for the previous year, and 47.54 and 7.08 per cent, the corresponding figures for colored troops for 1907.

Fifty-five and seventy-four hundredths per cent of the white troops weighed 140 pounds or over, while 2.61 per cent weighed less than 120 pounds, compared with 56.54 and 1.77 per cent for the previous year and 71.84 and 2.70, the corresponding figures for colored troops for 1907, showing that colored recruits were heavier than white accepted applicants of the same age.

The chest measurement of 41.25 per cent of white recruits was 34 inches and upward, and 4.23 per cent were 30 inches and under, compared with 42.15 and 2.92 per cent, respectively, for the previous year, and 53.54 and 2.36 per cent, the corresponding figures for colored recruits for the year 1907, the colored candidates again showing to advantage.

The following table shows the causes of rejections among white and colored candidates examined for enlistment during the year 1907, with ratios per 1,000 rejected:

*Causes of rejection of white and colored candidates examined for enlistment by medical officers of the Army, 1907.*

| Causes of rejection. | Total. | | White. | | Colored. | |
|---|---|---|---|---|---|---|
| | Total. | Ratio per 1,000 examined. | Total. | Ratio per 1,000 examined. | Total. | Ratio per 1,000 examined. |
| 1. Defects of vision | 301 | 96.78 | 291 | 98.71 | 10 | 61.73 |
| 2. Venereal diseases | 259 | 83.28 | 230 | 78.02 | 29 | 179.01 |
| 3. Heart disease | 255 | 82.00 | 240 | 81.41 | 15 | 92.60 |
| 4. Alcoholism | 235 | 75.56 | 227 | 77.00 | 8 | 49.38 |
| 5. Defects of hearing | 204 | 65.60 | 203 | 68.86 | 1 | 6.17 |
| 6. Diseases of the eye except defects of vision | 154 | 49.51 | 151 | 51.22 | 3 | 18.52 |
| 7. Hernia | 152 | 48.87 | 142 | 48.17 | 10 | 61.73 |
| 8. Flat feet | 144 | 46.30 | 132 | 44.78 | 12 | 74.07 |
| 9. Underweight | 143 | 45.98 | 140 | 47.49 | 3 | 18.52 |
| 10. Defective teeth | 133 | 42.76 | 120 | 40.71 | 13 | 80.25 |
| 11. Defects of the ear except defects of hearing | 124 | 39.87 | 123 | 41.72 | 1 | 6.17 |
| 12. Curvature of spine | 111 | 35.69 | 100 | 33.92 | 11 | 67.90 |
| 13. Chest development insufficient | 107 | 34.40 | 106 | 35.96 | 1 | 6.17 |
| 14. Varicose veins | 93 | 29.90 | 87 | 29.51 | 6 | 37.04 |
| 15. Defects of development except as shown in detail | 88 | 28.30 | 85 | 28.83 | 3 | 18.52 |
| 16. Hemorrhoids | 64 | 20.58 | 60 | 20.35 | 4 | 24.69 |
| 17. Injuries | 64 | 20.58 | 63 | 21.37 | 1 | 6.17 |
| 18. Tuberculosis | 62 | 19.94 | 56 | 19.00 | 6 | 37.04 |
| 19. Diseases of the skin | 62 | 19.94 | 53 | 17.98 | 9 | 55.56 |
| 20. Varicocele | 56 | 18.01 | 54 | 18.32 | 2 | 12.35 |
| 21. Diseases of the respiratory system | 55 | 17.68 | 54 | 18.32 | 1 | 6.17 |
| 22. Underheight | 44 | 14.15 | 42 | 14.25 | 2 | 12.35 |
| 23. Diseases of the organs of locomotion except spinal curvature | 39 | 12.54 | 37 | 12.55 | 2 | 12.35 |
| 24. Physical debility | 34 | 10.93 | 33 | 11.19 | 1 | 6.17 |
| 25. Weakness of mind | 24 | 7.72 | 22 | 7.46 | 2 | 12.35 |
| 26. General diseases except as shown in detail | 23 | 7.40 | 21 | 7.12 | 2 | 12.35 |
| 27. Diseases of the nervous system except as shown in detail | 23 | 7.40 | 20 | 6.78 | 3 | 18.52 |
| 28. Diseases of the genito-urinary system (non-venereal) | 22 | 7.07 | 21 | 7.12 | 1 | 6.17 |
| 29. Diseases of the circulatory system except as shown in detail | 15 | 4.82 | 15 | 5.09 | ..... | ..... |
| 30. Diseases of the digestive system except as shown in detail | 13 | 4.18 | 13 | 4.41 | ..... | ..... |
| 31. Overweight and obesity | 7 | 2.25 | 7 | 2.37 | ..... | ..... |
| Total | 3,110 | 1,000.00 | 2,948 | 1,000.00 | 162 | 1,000.00 |

Defects of vision, as during the previous year, caused the largest proportion of rejections in 1907, yet the rate showed a material decrease compared with that of the preceding year. Venereal diseases advanced from fourth to second place as a cause for rejection and incidentally had a higher rate than for 1906. Heart diseases also advanced considerably, compared with the previous year, the figures being 82.00 and 36.62, respectively. Alcoholism, with a rate of 75.56 per 1,000, made a most notable advance as a cause for rejection compared with the preceding year, when only 9.65 per 1,000 were rejected for that cause. There is no apparent reason for this increase. The proportion of rejections for varicocele has dropped from the apparently high rate of 70.11 per 1,000 in 1905 to 18.01 for the present year, the reduced rate being due to the change in the standard as regards this condition. The rate for defective teeth was also considerably lowered during the last year, caused by a change in the requirements in this regard.

## SANITATION.

It is becoming more apparent each year that sanitation, the science of preventive medicine, is probably the most important of the many duties of the army medical officer. The Army, all parts of it, exists *only for war purposes,* and it is now known to everybody that pre-

ventable disease in time of war causes more deaths and more non-efficiency than do all the offensive weapons of the enemy. Disease, the greatest enemy of efficiency, must therefore be prevented by the Medical Department, and to do so its hands must be strengthened as much as possible. Even in time of peace great improvement can be made in this respect.

The following order, published during the past year, marks a decided advance in one direction—delegating to medical officers executive powers in sanitary matters:

General Orders,
No. 37.

FORT SHERIDAN, Ill.,
*August 18, 1907.*

[Extract.]

1. The surgeon is the chief sanitary officer of the post and reservation; all orders given by him in that capacity have the sanction of the commanding officer and must be promptly obeyed.

By order of Lieutenant Colonel Finley:

(Signed) THAD. B. SEIGLE,
*1st. Lt., Batt. Adjt., 27th Inf., Adjutant.*

Something of the same kind was done in most of the maneuver camps of 1906, when sanitary squads, working under the supervision of a medical officer, carried into execution his own recommendations after they had been approved by the commanding officer, and the plan worked excellently.

In addition to the granting of executive authority to the Medical Department in sanitary matters, all the special apparatus used in sanitary work and the care and transportation of the sick, such as ambulances, water carts, water sterilizers, disinfecting apparatus, field crematories, etc., should be purchased and supplied by the Medical Department. This would have the effect of putting into the hands of the sanitary expert the means necessary for carrying into effect his recommendations, so that they may be employed at such times and in such manner as his special knowledge and experience may dictate, and would definitely fix the responsibility for sanitary measures. The efficiency of these special appliances usually depends upon the details of their construction, details with which only a specialist can be expected to be familiar; and still more important is it that he should be able to control the time, place, and quantity of issue of such appliances.

In paragraph 1405, Army Regulations, "the Medical Department is charged with the duty of investigating the sanitary condition of the Army and making recommendations in reference thereto * * * ;" and in paragraph 1406 it is stated that "the surgeon, under the direction of the commanding officer, will supervise the hygiene of the post or command, and recommend such measures as he may deem necessary to prevent or diminish disease. He will examine at least once a month, and note in the medical history of the post, the sanitary condition of all public buildings, the drainage, the sewerage, amount and quality of the water supply, the clothing and habits of the men, and the character and cooking of the food, and immediately after such examination will report thereon in writing to the commanding officer, with such recommendations as he may deem proper." As the regulations now stand, defective sanitary arrangements in construction work do not come to the notice of the sanitary department of the Army until the work is completed, and mistakes which might easily

have been prevented at the proper time may have to be corrected at great expense and loss of time, or they are not corrected at all, and avoidable sickness results. It is therefore recommended that the regulations be so amended as to provide that, except in emergency, no buildings for occupation by troops shall be constructed or altered until the opinion of the proper officer of the Medical Department has been obtained as to the sanitary questions involved in construction, arrangement, plumbing, heating, lighting, ventilation, etc., nor except in case of emergency shall any existing buildings not already occupied by troops be used for such purpose until an opinion has been obtained from the Medical Department as to their suitability from a sanitary point of view.

There have from time to time been complaints that railroad trains used for the transportation of troops have been in a filthy and insanitary condition. To prevent a recurrence of such conditions it is recommended that paragraph 1122, Army Regulations, be so amended as to prescribe that when special trains are provided for the transportation of troops for a journey of more than twenty-four hours' duration, and except in emergencies not permitting of delay, such train shall not be used for such purpose until the opinion of a medical officer has been obtained as to the suitability of the arrangements from a sanitary standpoint.

Protection of the command against insect-borne diseases has been carefully sought for a number of years past. The measures recommended have been directed chiefly against mosquitoes and flies, particularly the former.

The antimosquito campaign, while undoubtedly costing something, has been attended by results far outweighing the cost. Thus in the United States there has been a steady reduction in the rates for malarial fever, which this year are the lowest ever attained in the Army, the admission rate having been reduced from 665.82 per 1,000 in 1898 to 30.20 in 1907, which means in a mean strength of 35,137 for the year a saving of 22,338 admissions for malaria alone. When the same measures which have been so successful in the United States are carried out in the Philippine Islands the same results may be expected.

Last year particular attention was called to the importance of house flies as carriers of typhoid fever, intestinal diseases, tuberculosis, etc., and with a view of preventing the breeding of flies recommendation was made that all accumulations of stable manure be kept in fly-proof rooms; unfortunately this recommendation was disapproved by the Acting Secretary of War. Since that time renewed attention has been called to the matter by the report of a study of the subject in New York City, under the auspices of a committee of the merchants association. This report showed plainly the coincidence of the occurrence of these diseases and the periods of excessive prevalence and activity of house flies.

The same thing is very clearly shown in the chart of the prevalence of typhoid fever in the Army in the United States by months. In view of these facts the suppression of flies becomes fully as important as that of mosquitoes. The measures to be taken are thorough screening of all dining rooms and kitchens and the prevention of fly breeding. House flies breed chiefly in horse manure, but to a *less extent in* human excreta and decaying organic matter generally.

Cleanliness about kitchens and mess rooms, destruction of waste organic matter, and preventing access of flies to feces are important; but the essential point is preventing access of flies to their natural breeding place—horse manure.

## UNITED STATES (CONTINENTAL), EXCLUSIVE OF ALASKA.

The average mean strength of the troops serving in the United States during the year was 35,132, of which 34,091 were white and 1,041 were colored.

Deaths and discharges which occurred among soldiers in the United States whose commands were on foreign service and who had been invalided home have been charged to the country from which the soldier was invalided.

The admission, discharge, constantly noneffective, and total loss rates, 1,172.04, 25.36, 45.22, and 30.99, respectively, were all lower than those of last year, while the death rate, 5.63, was a very little higher than for 1906, but lower than for any previous year.

The reduction in the discharge rate was particularly notable, 32.29 to 25.36, and is believed to be the result of the new system of recruiting, by which all recruits must be passed by an officer of the Medical Corps.

Venereal diseases, as usual, led all others as causes of admission and noneffectiveness, the rates being 167.82 and 11.22, as compared with 158.91 and 10.90 for 1906. Next in order of importance as causes of admission were influenza 57.98, bronchitis 54.19, diarrhea and enteritis 39.39, and alcoholism 36.09.

The most important cause of discharge for disability was tuberculosis, with venereal diseases second.

Cerebro-spinal fever and tuberculosis led as causes of death with ratios of 0.55 and 0.53, respectively; pneumonia was next with a rate of 0.47, followed by organic heart diseases, 0.30, and typhoid fever, 0.19.

## PREVALENCE OF SPECIAL DISEASES.

### TYPHOID FEVER.

The admission and death rates for this disease, 3.53 and 0.19, were the lowest for any year of record in this office; the case mortality was 5.6 per cent.

The death rate, 0.19, is only about two-thirds of that of the civilian population of the United States, 0.28, as shown by the last report of the Bureau of the Census, and considerably less than half that of the civilian population of the military age.

The following comparative table shows the most important changes in the admission rate at posts:

| Post. | 1906. | 1907. |
|---|---|---|
| Fort Snelling | 18 | ..... |
| Fort Oglethorpe | 11 | 4 |
| Fort Riley | 8 | 2 |
| Fort Schuyler | 7 | ..... |
| Washington Barracks (post) | 6 | ..... |
| Columbus Barracks | 5 | 10 |
| Fort Sam Houston | 2 | 16 |
| Fort Leavenworth | 4 | 12 |
| Fort Thomas | 2 | 7 |
| Fort Slocum | 1 | 6 |

The disappearance of typhoid fever at Fort Snelling, Minn., appears to have been due to the departure from that post of the infected troops, the disease, however, appearing at their new station.

The marked improvement at Fort Oglethorpe is attributed to improved sanitary conditions at the target range, where most of the cases have heretofore been contracted; since 1906 Forbes water sterilizers, McCall incinerators, and screened kitchens have been provided.

The surgeon at Fort Riley is of opinion that none of the cases which occurred at that post in 1906 and 1907 originated there.

In the case of Fort Schuyler the subsidence of the outbreak is attributed by the surgeon to improved sanitary conditions, especially to the cleaning out of an old sewer and the elimination of flies.

The improvement at Washington Barracks was coincident with a fall in the rate for the city of Washington.

The increase at Columbus Barracks is ascribed to the increased prevalence of the disease in the city of Columbus and to the larger garrison exposed to infection from that source.

Of the outbreak at Fort Sam Houston, Tex., the surgeon reports:

The first case of typhoid appeared May 23, 1907, and the date of last admission was June 28, 1907.

With one exception, all the cases were confined to the field artillery and cavalry, who occupied adjacent barracks in the new post.

On the appearance of the disease, Contract Surgeon A. W. Chase, U. S. Army, immediately inspected the post. He is of the opinion that the post artesian water supply was pure and in no way responsible for the infection. The fact that the disease was practically confined to one locality in the post, although all the command used the water from this supply, substantiates this view.

Doctor Chase states that in making his inspection he found an old latrine, about 50 paces to the rear of one of the artillery barracks, which was used by employees of the contractors then employed in the construction of the new post. These employees were a mixed lot of whites, Mexicans, and negroes and resided in and around the adjacent city of San Antonio, where typhoid fever had been prevalent since some time in the preceding April, or nearly two months prior to its appearance in the post.

This latrine, Doctor Chase reports, was in an exceedingly filthy condition and that the soil for 20 feet around was contaminated to such an extent that he was obliged to put down boards upon which to walk in order to reach the building without fouling his shoes. He also reports that the flies were very numerous, and that he found that the cooks in the nearby barracks were in the habit of opening the screens to their kitchens in order to get all the ventilation possible. He states that the flies flew back and forth between the latrine and kitchens freely.

The latrine was moved; the soil about it was freely disinfected with crude phenol; the screens to all barracks were kept in position at all times; drinking water was boiled and kept in locked containers, and all excreta and clothing of suspected cases were disinfected. After the foregoing preventive measures had been in force for a little more than a month, the epidemic subsided.

I am unable to account for the case which occurred in the detachment, Ninth Infantry, it having apparently been an isolated case and not directly traceable to the epidemic in the artillery and cavalry post.

From the facts I have been able to gather, it would appear that the disease was imported from San Antonio, Tex., by contractor's employees who made use of the latrine mentioned, and from thence the infection was conveyed by flies to the kitchen of the Sixth Battery, Field Artillery, which had 7 cases; to the Third Battery, Field Artillery, which had 3 cases; and to Troop G, First Cavalry, situated on the same line, which had 4 cases.

At Fort Leavenworth all the cases are said to have been imported.

The surgeon at Fort Thomas expresses the opinion that all the cases at his post were probably contracted in Cincinnati, and that the increased number of cases was coincident with the increase in the *strength of the* garrison.

At Fort Slocum the disease was sporadic, all or nearly all of the cases having been contracted outside the post.

### UNDETERMINED FEVERS.

The admission rate for this class of fevers fell from 7.73 in 1906 to 4.67 in 1907.

### MALARIA.

The admission rate for malarial diseases, 30.20, is the lowest of which any record can be found in this office; last year the rate was 50.27.

The following table shows the 10 posts having the highest admission rates for malarial diseases:

[Ratio per 1,000 of mean strength.]

| | Mean strength. | | Malarial diseases, total. | |
|---|---|---|---|---|
| | 1907. | 1906. | 1907. | 1906. |
| Fort Washington, Md | 220 | 250 | 363.64 | 736.00 |
| Fort Lincoln, N. Dak | 177 | 111 | 254.24 | 126.13 |
| Fort Howard, Md | 232 | 252 | 185.34 | 214.29 |
| Fort Hunt, Va | 103 | 100 | 165.05 | 410.00 |
| Fort McIntosh, Tex | 203 | 189 | 128.08 | 42.33 |
| West Point, N. Y | 554 | 511 | 110.11 | 105.68 |
| Jefferson Barracks, Mo | 706 | 655 | 89.24 | 216.79 |
| Fort Hamilton, N. Y | 373 | 391 | 88.47 | 94.63 |
| Fort Barrancas, Fla | 440 | 496 | 84.09 | 44.35 |
| Fort Bliss, Tex | 238 | 283 | 84.03 | 7.07 |
| Total United States | 35,132 | 40,621 | 30.20 | 50.27 |

These are the same posts that had a like unenviable prominence last year, except that Forts Sill, Assinniboine, and Omaha have been replaced by Forts McIntosh, Bliss, and Barrancas. The greatest improvement in rates was noted at Fort Hunt, from 410.00 to 165.05; Jefferson Barracks, 216.79 to 89.24; and Fort Washington, 736.00 to 363.64. Forts Bliss and McIntosh showed a tremendous increase in malaria, probably due to the arrival at those posts of the Nineteenth Infantry from the Philippine Islands; the great increase at Fort Lincoln was probably due to a similar cause, while the increase at Fort Barrancas was not accounted for.

### SMALLPOX.

There were only 4 admissions for smallpox and no deaths.

### MEASLES AND MUMPS.

These diseases were unusually prevalent but attended by no mortality.

### INFLUENZA.

Influenza was epidemic during the year; only 1 death resulted.

### DYSENTERY.

The admission rate for dysentery was 4.18, as compared with 5.96 for the previous year; there were no deaths; two-thirds of the infections were amebic.

### CEREBRO-SPINAL FEVER.

There were 33 cases of this disease during the year with 20 deaths. Of these, 20 cases with 10 deaths resulted from a sharp epidemic of the disease at the recruit depot, Jefferson Barracks; a couple of cases occurred at the Columbus Barracks recruit depot and the rest were scattered all over the country and nearly all in recruits recently arrived from one of the recruit depots.

Of the outbreak at Jefferson Barracks the surgeon reported that influenza was prevailing quite extensively when cerebro-spinal meningitis made its appearance, and as moderate cases of cerebro-spinal meningitis in an early stage resemble influenza, the interesting question at once arises of how the differential diagnosis can be made. In this connection he invited attention to the great value of *Kernig's sign* which was present in every case whose subsequent course proved to be cerebro-spinal meningitis, and not otherwise. During the coincidence of the two diseases it is invaluable. On February 12 three cases of cerebro-spinal meningitis were admitted to hospital, one from the seventeenth recruit company and two from the eighteenth recruit company. Two of these men died February 15 and the other on the 17th. February 16 one case occurred in the nineteenth recruit company; February 23 two cases occurred in the sixteenth recruit company, and one in the same company on the 24th and 27th, respectively. On the 28th one case each occurred in the fifteenth, sixteenth, eighteenth, and nineteenth. Thus it is seen that within sixteen days of its first appearance it had spread to every company except the band, and up to date (March 28, 1907) no case has occurred in that organization.

On March 1 a private, first class, hospital corps, age 20, who was nursing these cases, contracted the disease and on March 4 one patient in hospital who had assisted with these cases was taken sick with it.

*Etiology.*—It is difficult to give any satisfactory reason for the origin of the disease at this post. The sanitary condition of the post was good. There was no overcrowding, excessive fatigue from drills, etc., and in fact none of the factors that are generally considered to have a causative effect. Age was a markedly predisposing cause. Out of the 20 cases which have occurred to date but one man was over 23 years of age and the average age was 21½. The hospital corps private who contracted it from cases he was nursing was 20 and the patient who similarly contracted it was 22. In case this disease should appear at other depots the very young members of the hospital corps should not be put on duty to nurse cases of this disease, but the oldest men assigned. The infection gradually but steadily spread from barrack to barrack, but nowhere else. No officers or their families, no civilians, or other persons living on the reservation and not in contact with cases contracted it. It is believed that the disease is contagious for those susceptible to it, but that in a given number of young people relatively few are susceptible.

### TUBERCULOSIS.

The admission and death rates for tuberculosis, 4.90 and 0.53, compare favorably with those for 1906, 5.22 and 0.78, respectively.

A well-marked instance of contact infection occurred during the year at *Fort Williams*, Me., in which 4 cases of pulmonary tubercu-

losis were discovered in one company in the course of one month; removal of the patients followed by disinfection of the barracks put an end to the outbreak.

Another point bearing on contact infection is the undue prevalence of the disease in members of the hospital corps; the admission rate for these men was about twice as great as for the other arms of the service.

### VENEREAL DISEASES.

Both the admission and noneffective rates were higher than for 1906, though lower than for 1905. The increase was in the admissions for chancroid.

### ALCOHOLISM.

This disease also continues to show a steady increase.

### INSANITY.

There was a slight increase in the admission rate, from 1.33 in 1906, to 1.79 in 1907.

### PNEUMONIA.

Pneumonia gave a slightly increased number of admissions and considerably higher case mortality.

### DIARRHEA AND ENTERITIS.

There was a notable improvement in respect to these diseases, the admission rate for which was reduced nearly one-half.

### INTESTINAL PARASITES.

The admission rate for this class of diseases has increased from 1.54 to 1.74. An examination of the feces of 2 officers and 19 men at Fort Logan H. Roots, and recently returned from the Philippine Islands, showed that all were infected with *Ankylostomum duodenale*, and 80 per cent in addition with the *Hymenolepsis nana;* 8 of the cases were on sick report for intestinal fevers, 7 for other complaints, and 6 were not on sick report.

### INFLUENCE OF STATION.

The highest admission and noneffective rates and the lowest death rate occurred in the Department of the Gulf, while the lowest admission and noneffective rates were noted in the Department of California, and the highest death rate in the Department of the Columbia. The high death rate in the Department of the Columbia was due to the occurrence of 6 deaths from pneumonia and 3 from cerebro-spinal fever.

The Department of the Lakes had the highest rate for typhoid fever, while the Department of Dakota had the lowest. The Department of Dakota had the highest rate for malaria and the Department of the Columbia the lowest. The Department of California had the lowest rate for pneumonia, while the Department of the Columbia had the highest, the latter department also had the highest rate for tuberculosis and the lowest for dysentery.

Fort Oglethorpe, Ga., which in 1906 had the highest noneffective rate of any post in the United States, this year had both the highest noneffective and the highest admission rates. The cause of this unenviable prominence was an epidemic of influenza which occurred in February and March, an epidemic of measles which occurred in March, April, and May, and to the unusual prevalence of venereal diseases throughout the year.

The post having the next highest admission rate was Fort Ethan Allen, Vt., and the next highest noneffective rate Fort Thomas, Ky. The lowest admission and noneffective rates occurred at Fort Du Pont, Del.

The recruit depots, in which all the rates are high, are considered separately, as large numbers of men are there kept under observation to determine their fitness for service and the conditions are quite different from those at ordinary posts.

## INFLUENCE OF AGE AND LENGTH OF SERVICE.

As has been uniformly the case in the past, all the rates except the death rate were highest in the youngest soldiers and those of least service; the highest death rates occurred in those soldiers upwards of 50 years of age and of over ten years' service. The lowest admission and noneffective rates occurred in soldiers between the ages of 40 to 44 years, and of long service.

## INFLUENCE OF RACE.

As a general rule in the past all the rates for colored troops except the death rate have been lower than for white troops. In 1907, however, all the rates, except the admission rate, were higher for the colored soldiers, the death rate was more than twice as high, and the discharge for disability rate almost double.

The principal causes of the high death rate among the colored soldiers were tuberculosis and pneumonia. The relative prevalence of certain special diseases among white and colored troops with the admission rates per 1,000 for each, are shown in the following table:

| Special diseases. | Admission rates. | |
|---|---|---|
| | White. | Colored. |
| Venereal diseases | 167.49 | 178.67 |
| Influenza | 59.08 | 22.09 |
| Diarrhea, including enteritis | 40.19 | 13.45 |
| Alcoholism | 36.93 | 8.65 |
| Malaria | 31.09 | .96 |
| Measles | 14.23 | 1.92 |
| Rheumatism, acute articular | 9.12 | 17.29 |
| Tuberculosis, all | 4.75 | 9.61 |
| Dysentery | 4.28 | .96 |
| Typhoid fever | 3.61 | .96 |
| Pneumonia, lobar | 2.41 | 6.72 |
| Cerebro-spinal fever | .97 | ..... |
| Frost bite and freezing | .59 | 1.92 |
| Hepatic abscess | .32 | ..... |

## DISCHARGES FOR DISABILITY.

The disability discharge rate, 25.36, shows a notable improvement over that for 1906, when the rate was 32.29. The marked reduction *is* probably due to the fact that since about the 1st of August, 1906, *all recruits must pass* the scrutiny of an officer of the Medical Corps.

The principal causes of discharges, with the percentage of the total discharges, were as follows: (1) Tuberculosis, 17.53; (2) venereal diseases, 16.67; (3) insanity, 6.91; (4) epilepsy, 6.30; (5) congenital malformations and arrested development, 5.80. The greatest improvement was noted in the figures for defective vision and hearing and those for organic diseases of the heart. The proportion of those discharged for disabilities which existed before enlistment has been reduced from 51 per cent to 33 per cent.

## SANITATION.

Sanitary conditions at posts are generally good, and improvements are gradually being made. In several instances, however, the prevalence of disease has been attributed to remediable insanitary conditions. This has been notably the case with epidemics of tonsillitis and influenza, which have been reported as due to overcrowding and defective ventilation.

Serious overcrowding has been reported from the recruit depots, Fort Douglas, the military prisons at Fort Leavenworth and Alcatraz Island, and from other places.

Our sick rates for tuberculosis and diseases of the respiratory organs—diseases, the prevalence of which is notably aggravated by overcrowding—are considerably larger than in most European armies. It is believed that a minimum superficial and cubic air space for soldiers in barracks should be adopted and rigidly insisted upon; the increased cost of construction would be compensated for by a diminished sick rate and increased efficiency.

It is understood that in all new construction of barracks the quartermaster's department allows 60 square feet of floor space and 720 cubic feet of air space per man in the dormitories. While this is much more space than is available in most of the older barracks, it is believed that a still more liberal allowance should be made, not less than 85 square feet of floor space and 1,020 cubic feet of air space in the Temperate Zone, and 100 square feet of superficial area and 2,000 cubic feet of air space for the Tropics. The superficial and cubical area and the permissible number of occupants should be marked on the doors of each dormitory.

At some of the older seacoast posts casemate barracks are still in use and are generally reported as insanitary; in fact, it is practically impossible to render such barracks healthful, and they should be abandoned as soon as possible. Some of the posts still using casemate barracks are Forts Wadsworth, Schuyler, Warren, and McHenry.

A decidedly objectionable feature of many of the new barracks is the location of the bathrooms, water-closets, etc., in the basements. These basements are usually dark, damp, and decidedly insanitary. It is now generally conceded by sanitarians that all plumbing fixtures should be open and exposed as freely as possible to light and air. Officers would not bathe nearly so frequently if they had to go down into a dark, damp, and often cold cellar to take a bath, and enlisted men are much the same sort of animal.

In cold climates toilet facilities should be on the same floor as the dormitories and so placed and arranged as to provide an abundance of light and air. With proper plumbing there need be no fear of contamination of the air of the dormitories.

In warm climates all plumbing appliances may well be placed in a separate building. In any case the floor and walls should be of impervious material.

Drainage and sewage at posts have been generally satisfactory. When defects have been reported they were usually of a temporary nature and proper steps had been taken to have them corrected.

At Key West Barracks, Fla., a serious condition of affairs has resulted from a cutting off of the sewer outlet of the post by the fillings made in the construction of a railroad. Suitable recommendations have been made to overcome the difficulty.

At Jackson Barracks, La., the sewer system is also reported as defective. The same condition was reported from Fort Morgan, Ala., where the post was practically destroyed by a storm in September, 1906. It is being rebuilt.

Few defects have been reported regarding the water supply of posts during the year. The surgeon at Fort Morgan noted that the water from the surface wells which furnish a portion of the water supply of the post was salty and not potable.

From Plattsburg Barracks it was reported that the water supply, which is that of the city of Plattsburg, while generally pure, was liable at times to grave pollution from its watershed. Recommendation was made, and approved by this office, that steps be taken to secure a pure and independent water supply from artesian wells. Nothing has been done along this line so far as known.

In January it was reported that the water supply at Fort Wright, which is that of the city of Spokane and from the Spokane River, was in danger of serious pollution from the increasing population of the watershed. Deep or artesian wells were recommended. Later it was stated that the municipal authorities had taken steps to safeguard the water supply.

With a view of determining the best method of purifying water for troops in the field, 25 Darnall filters and 1 Forbes water sterilizer on wheels have been purchased and will be thoroughly tried out by the troops in this year's maneuvers.

There have been few complaints of the clothing, though criticisms of the shoes issued by the quartermaster's department have come from several posts. Generally, the points criticised are low insteps, inadequate width in proportion to length, insufficient variety of sizes kept in stock for issue by post quartermasters, and lack of care in properly fitting the soldier.

Maj. Edward L. Munson, surgeon at Fort Sheridan, in an exhaustive report on this subject, calls attention to the existence of a "military foot," as distinguished from that of civilians, due to weight carrying and marching. The peculiarities of this foot are increased width and thickness in proportion to length, and he recommends special military lasts based on a series of measurements of the feet of a large number of soldiers. He further recommends that company officers be required to see that the men of their commands are properly fitted before they leave the quartermaster's storehouse. In these recommendations I concur.

Complaints concerning the food supply have generally been of minor and occasional defects of quality, such as will sometimes happen, and have been promptly corrected. Lack of sufficient variety

in the soldiers' diet has also been noted. It is believed that the new ration table ordered by the President with its liberal proportions and largely increased number of substitutive articles will remove all causes for complaint.

## CAMPS OF INSTRUCTION.

Now that the War Department is acquiring large tracts of land for permanent maneuver camps, it becomes important that the sanitary arrangements should be as perfect as possible. In all of them a piped supply of pure water should be provided as well as a permanent system of sewers.

Had the country possessed such camping grounds for the volunteers of 1898, there is every reason to believe that the great typhoid epidemic of that year would have been prevented, and the camps would soon have demonstrated the wisdom and great economy of such preparations for war.

Unfortunately, in the past officers in authority, assuming that epidemic diseases are inevitable in war, have argued that troops going into camp should, as a part of their training, be subjected to what they call "service conditions;" that is to say, that inasmuch as they can not have piped water, sewers, and screened kitchens and messes when on the march, they should not have them in camp; that the troops must be "hardened" or "seasoned." No greater mistake could be made. It is well known that a marching command is a healthy one, because it leaves its excreta and wastes behind. It is in camp where these dangerous matters accumulate and epidemics develop, and unless the sanitary conditions there are made as perfect as possible there will be few troops left to march out.

## ALASKA.

The average mean strength of the troops serving in Alaska during the year was 847, composed of infantry, signal corps, and hospital corps, all white.

Alaska, always the healthiest station at which American troops are serving, gave lower ratios in 1907 than ever before, the admission, death, and noneffective rates for the year being 657.62, 3.40, and 21.22, as compared with 714.29, 6.46, and 23.87 in 1906. There was only one death from disease, and that was the result of pneumonia.

Influenza and bronchitis caused 30 per cent of the total admissions for disease. There was no case of typhoid fever and only one of malaria. As was the case last year, Fort Egbert had the highest admission and noneffective rates; Fort St. Michael had the lowest.

The highest admission and noneffective rates were noted in February and the lowest in December.

Thirteen enlisted men were invalided home, of whom 8 were returned to duty and 5 discharged for disability.

## SANITATION.

There have been no material changes in sanitary conditions during the year.

## CUBA.

The average mean enlisted strength of the troops serving in Cuba during the year was 4,436, all white.

The admission rate, 1,164.34, was almost exactly the same as that for 1906, 1,166.52, but the discharge, 17.25, death, 5.46, and constantly noneffective rates, 39.09, were considerably higher than those for 1906. All the general rates were better than those for troops serving in the United States continental.

The death rate for disease, 3.28, is only about three-fourths of that for white troops in the Philippine Islands.

Venereal diseases far surpassed all others as causes of admission, 152.39, and noneffectiveness, 18.66, followed by diarrhea and enteritis, admissions 77.55, malarial fevers, admissions, 51.40, and alcoholism, admissions, 48.92, respectively.

Reference to the following table will show that typhoid and yellow fevers were the chief causes of death from disease.

*Deaths among troops serving in Cuba in 1907.*

| Causes. | Number. | Ratio per 1,000 of— | |
|---|---|---|---|
| | | Mean strength. | Total deaths. |
| DISEASES. | | | |
| Typhoid fever | 6 | 1.31 | 400.00 |
| Yellow fever | 5 | 1.09 | 333.33 |
| Malarial fever, pernicious | 1 | .22 | 66.67 |
| Pyemia | 1 | .22 | 66.67 |
| Cerebral meningitis | 1 | .22 | 66.67 |
| Pneumonia | 1 | .22 | 66.67 |
| Total for disease | 15 | 3.28 | 1,000.00 |
| EXTERNAL CAUSES. | | | |
| Drowning (all accidental) | 4 | .87 | 400.00 |
| Gunshot wounds (suicidal, 1; homicidal, 1; accidental, 1) | 3 | .65 | 300.00 |
| Fracture of skull (accidental fall) | 1 | .22 | 100.00 |
| Crushing (railroad accident) | 1 | .22 | 100.00 |
| Poisoning, acute (cardiac paralysis during chloroform anesthesia) | 1 | .22 | 100.00 |
| Total for external causes | 10 | 2.18 | 1,000.00 |
| Grand total | 25 | 5.46 | ..... |

## PREVALENCE OF SPECIAL DISEASES.

### TYPHOID FEVER.

The admission and death rates for this disease, 9.24 and 1.31, show a marked improvement over the rates for last year, 57.88 and 1.60, but are very much higher than for the United States, continental.

Of the total of 41 cases, 20 occurred in the Fifteenth Cavalry, 9 in Troop M of that regiment, and 4 each in Troops D and K.

### UNDETERMINED FEVERS.

The admission rate for this class of diseases, 20.96, is almost five times as great as for the United States.

### MALARIAL FEVERS.

Malarial fevers had an admission rate of 51.40 as compared with *72.13 for last year,* and 30.20 for the United States.

### DYSENTERY.

The rate for dysentery, 9.24, was about the same as for 1906; amebic and bacillary dysentery were about equally prevalent. The medical returns have always shown far less dysentery among the troops in Cuba than in those serving in the Philippines; indeed, the chief surgeon in Cuba is of the opinion that most of the cases reported from the command there were recurrences of infections contracted in the Philippine Islands.

### YELLOW FEVER.

There were 18 cases of this disease, with 5 deaths. Thirteen of the cases occurred at Cienfuegos, 3 at Santa Clara, and 2 at Ciego de Avila. Of the 13 cases at Cienfuegos 9 were in hospital corps men, and 12 were believed to have been contracted in the hospital which was in a part of a building used as a civil hospital; it was thought that an unrecognized mild case occurred in the civil hospital and infected some *stegomyia*, which afterwards gained access to the military section.

### DENGUE.

There were 130 cases of dengue as compared with 1 case in 1906; no deaths resulted from this disease. It is of interest to note that although this disease prevailed at a time when yellow fever was existent, and was coincident with that disease at Cienfuegos, that little confusion or doubt in diagnosis arose therefrom.

### TUBERCULOSIS AND VENEREAL DISEASES.

The rates for these diseases were slightly lower than in the United States.

### DIARRHEA AND ENTERITIS.

These diseases have an admission rate of 77.55, nearly twice as high as for the United States.

### INFLUENCE OF STATION.

All the rates were highest at Santa Clara. The lowest admission and death rates were at Camp Columbia and the lowest noneffective rate at Ciego de Avila.

### INFLUENCE OF AGE AND LENGTH OF SERVICE.

The admission and noneffective rates were highest for soldiers 19 years and under and lowest for those between 45 and 49 years of age; the death rate was highest for those between 40 and 44 years old, and lowest for those aged 25 to 29 years.

For length of service all the rates, except the death rate, were highest for those in the second year of service; the death rate was highest in those in the fourth year.

### INFLUENCE OF SEASON.

The highest admission and noneffective rates were in August; the highest death rate in November; the lowest admission and noneffective rates were in February; there were no deaths in February or May.

## DISCHARGES FOR DISABILITY.

A study of the causes of discharge for disability, as shown in the following tables, discloses the fact that 65 per cent were for causes not in line of duty and of these 50 per cent were contracted before enlistment. The principal causes of discharge were insanity, venereal diseases, and drug habit.

## SANITATION.

There have been some complaints of the character of the buildings occupied by troops—overcrowding and deficient light and ventilation mainly. Inasmuch as the occupation of Cuba is only temporary no permanent construction was possible, but such corrections as were practicable were applied.

From one station report was made that the marching shoe was defective owing to poor leather and bad stitching.

## PORTO RICO.

There were no changes in the garrison of this island during the year, the only troops serving there being the Porto Rico regiment of native troops with an average mean enlisted strength of 564 men.

The following table shows the movement of sick for the year 1907 as compared with that for 1906:

| | Years. | From all causes. | | Excluding injuries, venereal diseases, and alcoholism. | |
|---|---|---|---|---|---|
| | | Total. | In hospital. | Total. | In hospital. |
| Ratios per 1,000 of mean strength: | | | | | |
| Admissions to sick reports | 1906 | 1,505.51 | 1,264.71 | 1,080.88 | ..... |
| | 1907 | 1,207.45 | 1,072.70 | 886.52 | ..... |
| Discharges on surgeon's certificate of disability | 1906 | 10.99 | ..... | 7.33 | ..... |
| | 1907 | 7.09 | ..... | 3.55 | ..... |
| Deaths | 1906 | 16.48 | ..... | 16.48 | ..... |
| | 1907 | 14.18 | ..... | 12.41 | ..... |
| Total losses | 1906 | 27.47 | ..... | 23.81 | ..... |
| | 1907 | 21.27 | ..... | 15.96 | ..... |
| Noneffective from sickness | 1906 | 47.92 | 40.44 | 27.03 | 24.54 |
| | 1907 | 42.38 | 39.88 | 26.85 | 25.46 |
| Average number of days lost: | | | | | |
| For each soldier | 1906 | 17.49 | 14.76 | 9.87 | 8.96 |
| | 1907 | 15.47 | 14.55 | 9.80 | 9.29 |
| For each case | 1906 | 11.62 | 11.67 | 9.13 | ..... |
| | 1907 | 12.81 | 12.05 | 11.05 | ..... |

It will be observed that all the rates are better than for last year; all except the death rate are also better than for any previous year since the statistics for Porto Rican troops have been separately compiled.

The death rate, 14.18, is still abnormally high, more than two and one-half times as great as for American troops serving at home, more than twice as great as for American troops in the Philippine Islands, and nearly three times as great as for Filipino troops serving at home.

As will be seen by reference to the following table, typhoid fever and tuberculosis were the chief causes of death.

Typhoid fever first made its appearance in the Porto Rico regiment in 1906, causing 9 admissions and 2 deaths that year and 14 *cases with 3 deaths* in 1907.

Eight of the cases occurred at Henry Barracks, Cayey, and 6 at San Juan. At both places the infection was believed to have resulted from using polluted water in the adjacent towns.

The rate for undetermined fevers (24.82) was nearly five times as large as for 1906; the diagnosis in all the cases placed in the "undetermined" list was "febricula."

| Cause of death. | Number of deaths. | Ratio per 1,000 of— | |
|---|---|---|---|
| | | Mean strength. | Total deaths. |
| Typhoid fever | 3 | 5.32 | 375.00 |
| Tuberculosis | 2 | 3.55 | 250.00 |
| Malarial fever, pernicious | 1 | 1.77 | 125.00 |
| Pneumonia, lobar, acute | 1 | 1.77 | 125.00 |
| Gunshot wound of brain (suicidal) | 1 | 1.77 | 125.00 |
| Total | 8 | 14.18 | 1,000.00 |

Malarial fevers gave an admission ratio of 237.59, somewhat less than for 1906.

There were 10 cases of smallpox as against 1 in 1906.

Venereal diseases gave an admission rate of 205.67, a slight improvement over the figures for the previous year.

Excluding injuries, venereal diseases, and alcoholism, the highest admission and noneffective rates were attained in November and the lowest in August.

The next table shows the relative prevalence of certain special diseases among Porto Rican and Filipino native troops. The differences are marked and notable.

In this connection it may be stated that no case of beriberi, dengue, or hepatic abscess has ever been reported from the Porto Rican troops.

| Disease. | Admission rate per 1,000 of mean strength. | |
|---|---|---|
| | Porto Rican troops. | Filipino troops. |
| Typhoid fever | 24.82 | 1.28 |
| Malaria | 237.59 | 312.67 |
| Smallpox | 17.73 | ..... |
| Measles | 46.10 | .43 |
| Influenza | 62.06 | 14.96 |
| Dysentery | 5.32 | 23.94 |
| Beriberi | ..... | 24.58 |
| Dengue | ..... | 13.25 |
| Yaws | ..... | .64 |
| Tuberculosis, all | 7.09 | 4.92 |
| Syphilis and results | 5.32 | 4.27 |
| Chancroid and results | 93.97 | 7.48 |
| Gonorrhea and results | 106.38 | 51.72 |
| Rheumatism, acute, articular | 17.73 | 3.42 |
| Alcoholism and results | ..... | 1.28 |
| Insanity | ..... | .85 |
| Filariasis | 8.87 | ..... |
| Bronchitis, acute and chronic | 19.50 | 45.31 |
| Hepatic abscess | ..... | .43 |
| Appendicitis | 5.32 | 1.07 |
| Tropical ulcer | ..... | 10.90 |
| Pemphigus contagiosus | ..... | 1.71 |
| Dhobie itch | 5.32 | 33.34 |

## RECRUITING.

In the following table it will be seen that about 75 per cent of recruits examined by medical officers were accepted; this proportion is slightly less than that for last year:

| | Number. | Ratio per 1,000 examined. |
|---|---|---|
| Examined by medical officers | 330 | 1,000.00 |
| Accepted | 247 | 748.48 |
| By first enlistment | 90 | 272.73 |
| By all other enlistments | 157 | 475.76 |
| Rejected by medical officers | 78 | 236.36 |
| Declined | 5 | 15.15 |

Forty-two and a half per cent were less than 25 years of age; only 5 recruits were under 21 years old.

Forty-five per cent were 66 inches tall or less, and only 1 recruit reached the height of 6 feet.

Over 50 per cent weighed less than 130 pounds, and only 9.3 per cent weighed 150 pounds or over.

Sixty-three and a half per cent of recruits had a chest measurement of 33 inches or under; only about 6½ per cent exceeded 35 inches. The following statement shows the causes of rejection among the candidates examined for enlistment during the year:

| Cause of rejection. | Number rejected. | Ratio per 1,000. |
|---|---|---|
| 1. Underweight | 21 | 269.23 |
| 2. Defects of vision | 8 | 102.56 |
| 3. Venereal diseases | 7 | 89.74 |
| 4. Diseases of the skin | 6 | 76.92 |
| 5. Heart disease | 5 | 64.10 |
| 6. Defective teeth | 5 | 64.10 |
| 7. General diseases, except as shown in detail | 3 | 38.46 |
| 8. Defects of hearing | 3 | 38.46 |
| 9. Chest development insufficient | 3 | 38.46 |
| 10. Diseases of the ear, except defects of hearing | 2 | 25.64 |
| 11. Varicocele | 2 | 25.64 |
| 12. Tuberculosis | 2 | 25.64 |
| 13. Diseases of the respiratory system | 2 | 25.64 |
| 14. Diseases of the genito-urinary system (nonvenereal) | 2 | 25.64 |
| 15. Flat feet | 2 | 25.64 |
| 16. Alcoholism | 1 | 12.82 |
| 17. Varicose veins | 1 | 12.82 |
| 18. Hemorrhoids | 1 | 12.82 |
| 19. Hernia | 1 | 12.82 |
| 20. Injuries | 1 | 12.82 |
| Total | 78 | 1,000.00 |

It will be noted that the most important cause of rejection was a deficiency in weight, nearly 27 per cent of the total rejections having been due to that cause; the same defect only caused 4 per cent of the rejections of American candidates for enlistment. Defects of vision, venereal diseases, and heart disease caused about the same percentage of rejections as for American recruits, but alcoholism, which caused 7½ per cent of the rejections of American recruits, does not appear as a factor among the Porto Rican candidates.

## HAWAII.

There has been during the year but one garrison of four companies of infantry in the islands. Camp McKinley was abandoned in June, the command moving to Fort Shafter.

The average enlisted strength was 192. The admission, discharge for disability, and constantly noneffective rates were 963.54, 10.42, and 35.42, compared with 1,008.62, 20.16, and 49.93 for 1906; there were no deaths.

There were no admissions for typhoid or malarial fever or dysentery.

The admission rates for venereal diseases, 223.96, and alcoholism, 67.71, are much higher than for any other country where United States troops are serving; these two causes of morbidity account for over one-third of all the admissions for disease

Four enlisted men were invalided home during the year, of whom two were subsequently returned to duty and two were remaining at the end of the year.

## HEALTH OF TROOPS IN THE PHILIPPINE ISLANDS.

### AMERICAN TROOPS.

All the rates for 1907 are much better than for 1906—indeed better than for any year since the occupation of these islands.

The mean strength of the command was 11,699.

The admission rate from all causes was 1,483.92 as compared with 1,700.32 for 1906; for disease, 1,260.11 as against 1,494.43 the preceding year. The discharge for disability rate was 8.54 in 1907 and 11.33 in 1906; the death rate was 6.92 in 1907 as against 9.11 in 1906; the constantly noneffective rate was reduced from 63.35 in 1906 to 55.49 in 1907, and the invaliding home rate from 29.08 in 1906 to 23.76 in 1907.

The principal factor in the improved rates of sickness and mortality was the marked fall in the rates for malaria, dengue, the eruptive fevers, diarrheal diseases, and diseases of the skin. These figures and facts are exceedingly gratifying as proving that great attention is being paid to preventive medicine with the results which always follow such attention.

Contrary to the experience in 1906, when all the rates, except admission, were lower for colored troops than for white troops, in 1907 all the rates, except that for discharge for disability, were higher for colored troops.

For diseases the principal causes of admission, in the order of importance, were venereal, malarial, diarrhea and enteritis, dengue, and dysentery, these five groups alone accounting for over 50 per cent of all admissions.

The principal causes of death in the order of relative importance were tuberculosis, which alone caused 20 per cent of all deaths from disease; organic heart disease, typhoid fever, dysentery, pneumonia, syphilis, and liver abscesses; these seven diseases having caused nearly three-fifths of all deaths.

Tuberculosis was the cause of one-third of all the discharges for disease, and insanity accounts for another one-eighth.

There were 2 admissions for sunstroke and 1 for snake bite without fatalities; 15 deaths occurred from drowning; 1 enlisted man was wounded in action and recovered; none were killed.

There were 2 cases of homicide, 7 of suicide, and 1 judicial execution.

## PREVALENCE OF SPECIAL DISEASES.

### TYPHOID FEVER.

The admission rate for this disease, 3.50, was slightly less than for last year, but there were 3 deaths, as against none for 1906. A serious outbreak occurred in Company I, First Infantry, at Dagami, Leyte, in the spring of 1907. In a total strength of 50 men there were 13 cases, with 1 death. All of these cases were admitted to hospital within a period of eight days and seemed to have contracted their infection about the same time. These circumstances would indicate that water was the probable source of the infection, and this view is supported by the fact that unsterilized water was known to have been used for a period of several days within the incubation period of the cases; also that the water was taken from a stream passing through a native village, and in which natives were standing and washing their clothes just above the place where the water was taken.

The Manila posts gave 7 admissions; the other posts infected were with few exceptions the same as last year.

### UNDETERMINED FEVERS.

The admission rate for these fevers increased from 8.97 in 1906 to 15.73 in 1907; there were no fatalities.

### MALARIA.

The admission rate for malarial diseases, 167.79, is little more than half that for the preceding year; there were only 2 deaths from this cause. The number of infections of which the type was undetermined was only 50, as compared with 189 in 1906 and 1,885 in 1905.

### ASIATIC CHOLERA.

There were 2 cases with 1 death.

### DYSENTERY.

The admission rate for this disease, 42.23, was about the same as last year; the proportion of amebic to bacillary infections was 17 to 1.

### DENGUE.

There were 738 admissions for dengue, as compared with 1,099 in 1906. A board of medical officers, which was convened at Fort William McKinley, P. I., to study this disease in the spring of 1908, concluded that it was not contagious, that it was transmitted by mosquitoes, and strongly recommended the usual antimosquito measures, such as screening, the use of mosquito bars, drainage, etc., as measures of prevention.

### BERIBERI.

This disease caused 1 admission and 1 death.

### YAWS.

Two cases of yaws were admitted.

### TUBERCULOSIS.

The admission rate for all forms of tuberculosis was 6.84; last year it was 5.49.

### VENEREAL DISEASES.

The admission rate, 311.22, was slightly higher than for 1906.

### ALCOHOLISM.

The ratios were about the same as those for 1906.

### INSANITY.

The admission rate for insanity was 1 88; for 1906 it was 2.02.

### PNEUMONIA.

There was a marked increase in the admission rate for this disease, from 0.48 in 1906 to 1.97 in 1907.

### DIARRHEA AND ENTERITIS.

These diseases, with an admission rate of 72.43, show a decided improvement as compared with the rate of 130.69 in 1906.

## INFLUENCE OF STATION.

The Department of Luzon had the highest admission rate and the Department of Mindanao the lowest; the Department of the Visayas had the highest death and noneffective rates and the Department of Mindanao the lowest.

Of the individual islands Guimaras had the highest admission and noneffective rates and Leyte the highest death rate. Mindanao had the lowest death and noneffective rates and Panay the lowest admission rate.

Of the posts in the Philippines those in Manila had the lowest admission and death rates; the highest admission rate occurred at Camp Downes, Leyte, and the highest death rate at Camp Bumpus, Leyte.

## INFLUENCE OF SEASON.

Exclusive of injuries, venereal diseases, and alcoholism, which are not influenced by season, the highest admission and noneffective rates occurred in October and the lowest in February; the highest death rate in April and the lowest in August.

## INFLUENCE OF AGE.

As is usually the case, the highest admission and noneffective rates and the lowest death rates were noted in soldiers under 25 years of age, while the lowest admission and noneffective rates and the highest death rates occurred among soldiers more than 45 years old.

## INFLUENCE OF LENGTH OF SERVICE.

The highest admission and noneffective rates and the lowest death rates occurred among soldiers in their first enlistment; the lowest admission and noneffective rates were noted for soldiers in their second enlistment, and the lowest death rate in those of over ten years' service.

## INVALIDED HOME

The number of enlisted men invalided home from the Philippine Islands in 1907 was 278, giving an invaliding ratio of 23.76, which was considerably less than that for 1906.

Tuberculosis alone caused over 25 per cent of the total invaliding, while dysentery was the next most potent factor, with a percentage of 11.87.

The percentage of deaths and discharges, 3.24 and 25.90 was somewhat less than last year.

## FILIPINO TROOPS.

The following table shows the movement of sick for the year:

| | From all causes. | | Excluding injuries, venereal diseases, and alcoholism. | |
|---|---|---|---|---|
| | Total. | In hospital. | Total. | In hospital. |
| Ratios per 1,000 of mean strength: | | | | |
| Admissions to sick report | 1,114.55 | 818.55 | 916.01 | ..... |
| Discharges on surgeon's certificate of disability | 8.55 | ..... | 8.34 | ..... |
| Deaths | 5.77 | ..... | 5.13 | ..... |
| Total losses | 14.32 | ..... | 13.47 | ..... |
| Noneffective from sickness | 28.57 | 23.47 | 22.23 | 18.41 |
| Average number of days lost: | | | | |
| For each soldier | 10.43 | 8.57 | 8.11 | 6.72 |
| For each case | 9.36 | 10.47 | 8.86 | ..... |

All the rates are considerably lower than for last year, and lower than for any year since these troops were organized; the death rate is just one-half of that for 1906. All the rates, except the death rate, are also lower than for American troops serving at home; the death rate is a fraction higher; the discharge for disability rate is about one-third of that for American troops, and the constantly noneffective rate, little more than one-half.

For disease the principal causes of admissions, in order of their importance, were malaria 312.67, venereal 63.48, diarrhea and enteritis 54.07, bronchitis 45.31, and dhobie itch 33.34; the reduction in the general admission rate was due to the great diminution in the number of cases of malaria, diarrhea, bronchitis and beriberi.

The causes of death are shown in the following table:

| Cause of death. | Number ratio per 1,000 of— | | |
|---|---|---|---|
| | Of deaths. | Mean strength. | Total deaths. |
| DISEASES. | | | |
| Tuberculosis (pulmonary, 4; tubercular peritonitis, 1; general miliary tuberculosis, 1) | 6 | 1.28 | 250.00 |
| Beriberi | 6 | 1.28 | 250.00 |
| Dysentery (amebic, 1; bacillary, 1; acute catarrhal, 1) | 3 | .64 | 125.00 |
| Malarial fevers (remittent, malignant) | 2 | .43 | 83.33 |
| Cholera, Asiatica | 2 | .43 | 83.33 |
| Meningitis, cerebral | 1 | .21 | 41.67 |
| Cardiac dilatation | 1 | .21 | 41.67 |
| Pleurisy, purulent | 1 | .21 | 41.67 |
| Cirrhosis of the liver, atrophic | 1 | .21 | 41.67 |
| Toxemia (due to suppurative adenitis of deep cervical glands extending to mediastinal and bronchial glands) | 1 | .21 | 41.67 |
| Total | 24 | 5.13 | 1000.00 |
| EXTERNAL CAUSES. | | | |
| Drowning (accidental) | 2 | .43 | 666.67 |
| Gunshot wounds (accidental) | 1 | .21 | 333.33 |
| Total | 3 | .64 | 1000.00 |
| Total for diseases and external causes | 27 | 5.77 | ..... |

The greatest improvement is shown by beriberi, malarial fevers, and cholera, which in 1906 caused 9, 6, and 8 deaths, respectively.

Excluding injuries, venereal diseases, and alcoholism, which were practically independent of seasonal influences, the highest admission, death, and noneffective rates are recorded in June, the lowest admission rate in November, and the lowest noneffective rate in December. There were no deaths in May and August.

## RECRUITING.

The following table shows the results obtained in the examination of applicants for enlistment in the Philippine Islands:

*Examination of Filipino applicants for enlistment during 1907.*

| | Number. | Ratio per 1,000 examined. |
|---|---|---|
| Examined by medical officers | 2,981 | 1,000.00 |
| Accepted by medical officers | 2,685 | 900.70 |
| By first enlistment | 975 | 327.07 |
| Other enlistments | 1,710 | 573.63 |
| Rejected by medical officers | 254 | 85.21 |
| Declined | 42 | 14.09 |

The number of applicants examined was about five times as great as in the previous year, but the percentage accepted was about the same, considerably higher than for American or Porto Rican troops.

Fifty-five per cent were 25 years of age or under.

Of recruits 64 inches in height or less, there were 67 per cent.

Fifty-four per cent had a chest measurement of 31 inches or under.

It is notable that defects of vision caused nearly 15 per cent of all rejections of Filipinos, while causing only about 10 per cent of rejections for American and Porto Rican troops; heart disease and tuberculosis also caused a larger proportion of rejections among the Filipino recruits, while venereal diseases caused almost exactly the same percentage of rejections in the three races.

## SURGICAL OPERATIONS.

Ninety operations were done upon enlisted men of the Philippine Scouts with 2 deaths, 1 due to a traumatic rupture of the intestines, and the other to perforation of a tubercular ulcer of the intestines.

## PREVALENCE OF DISEASE BY RACES.

In making this comparison it is to be borne in mind that the native troops were serving in their own country under conditions natural to them, but inimical to our troops, and that American soldiers excused from any portion of their military duty, no matter how trivial the cause, are placed on sick report, while this is not the case with the Philippine Scouts.

All the rates, except that for discharge for disability, were considerably lower for Filipino than for American troops; the discharge rate was the same for both races; the constantly noneffective rate for the Filipino troops was about one-half that for American troops.

The following tables indicate the relative susceptibility of the two races to the diseases noted:

| Disease. | American troops. | | | Filipino troops. |
|---|---|---|---|---|
| | Total. | White. | Colored. | |
| Venereal diseases | 311.22 | 276.94 | 494.31 | 63.48 |
| Diarrhea and enteritis | 72.48 | 73.57 | 66.67 | 54.07 |
| Dengue | 63.08 | 55.31 | 104.61 | 13.25 |
| Dysentery | 42.23 | 41.91 | 43.90 | 23.94 |
| Dyspepsia | 40.52 | 38.26 | 52.57 | 20.30 |
| Alcoholism | 29.23 | 32.47 | 11.92 | 1.28 |
| Articular rheumatism, acute and chronic | 9.48 | 6.39 | 26.01 | 4.06 |
| Diseases of the liver | 7.35 | 6.90 | 9.76 | 4.49 |
| Tuberculosis | 6.84 | 7.00 | 5.96 | 4.92 |
| Typhoid fever | 3.50 | 4.16 | ..... | 1.28 |
| Appendicitis | 3.25 | 3.55 | 1.63 | 1.07 |
| Measles | 2.91 | 3.04 | 2.17 | .43 |
| Heart disease, organic, including endocarditis and pericarditis | 2.57 | 2.03 | 5.42 | 1.07 |
| Pneumonia | 1.97 | 91 | 7.59 | .64 |
| Insanity | 1.88 | 2.23 | ..... | .85 |

| Disease. | Filipino troops. | American troops. | | |
|---|---|---|---|---|
| | | Total. | White. | Colored. |
| Malarial fevers | 312.67 | 167.79 | 189.97 | 49.32 |
| Bronchitis, acute and chronic | 45.31 | 36.76 | 31.76 | 63.41 |
| Constipation | 39.32 | 27.01 | 25.27 | 36.31 |
| Abscess, acute | 33.34 | 31.20 | 31.46 | 29.81 |
| Dhobie itch | 33.34 | 17.61 | 16.03 | 26.02 |
| Beriberi | 24.56 | .09 | 10 | ..... |
| Fevers, undetermined | 19.45 | 15.73 | 15.32 | 17.89 |
| Conjunctivitis, acute | 16.03 | 7.27 | 5.38 | 17.34 |
| Cholera, Asiatica | .21 | .17 | .20 | ..... |

The principal changes as compared with the tables of last year are that pneumonia and tuberculosis, which in 1906 were more prevalent among the Filipinos, in 1907 were more prevalent among the American troops.

## SANITATION.

### PUBLIC BUILDINGS AND GROUNDS.

Overcrowding has been reported from a number of posts, but the most constantly recurring complaint has been of leaky roofs, and especially where the rubberoid roofing has been employed.

Recommendation was made last year for screening all hospitals, barracks, and quarters, the construction of which would permit of it, and it is understood that an allowance of $40,000 has since been made to begin this important work. In the meantime and in such situations as do not permit the use of screens, mosquito bars must continue in use. While they can not take the place of screening, they serve a very useful purpose when properly designed and constructed. They should be of ample size to prevent the sleeper from coming in contact with them and getting bitten through the net, of small enough mesh (18 holes to the inch) to exclude the malarial mosquito, of strong bobbinet to resist ordinary strains, reenforced at the corners and angles and bound around the lower 2 feet with muslin to keep them from tearing when tucked in under the mattress. The size of the bedstead is also of importance. It should be about 7 by 3 feet to prevent the sleeper from touching the net; camp cots should never be used in permanent stations, as with them mosquito bars afford very little protection.

At all permanent posts construction of barracks and quarters should be of a permanent character. The buildings should be specially designed for tropical service, thoroughly screened against flies and mosquitoes, provided with porches to keep the sun's rays from the walls, and with a concrete base to isolate them from the subjacent soil dampness. The construction should probably be concrete, with native hard-wood floors and tile roofing. In any case, before standard plans are decided upon, this office should have an opportunity to be heard as to the sanitary features involved.

### DRAINAGE, SEWERAGE, AND DISPOSAL OF WASTES—WATER SUPPLY—CLOTHING.

There have been few changes of importance since the last report; at the posts of Jolo, Parang, and Zamboanga there has been considerable new construction, including water and sewerage systems. A number of improvements have also been made at Camp Hay, Benguet, and at the Los Baños Hot Springs, Laguna, with a view of fitting up these places as sanatoria for the troops.

A great majority of the posts still use earth closets, which are at best an unsatisfactory method of disposal of excreta. McCall incinerators have given such satisfactory results in Cuba and in camps in the United States that there is no reason to doubt they would be equally useful in the Philippine Islands, and it is recommended that a sufficient number of these be sent to replace the earth closets where sewers are not available.

### FOOD SUPPLY.

There has been temporary failure in the supply of fresh meat, etc., at some of the remote posts, due to more or less unavoidable causes, but in general the food supply and its preparation have been satisfactory.

## TROOPS ON TRANSPORT.

During the year 1907 about 8,000 enlisted men left the United States on transports for passage to foreign stations, and about 6,000 returned from foreign stations.

The sanitary condition of the transports has not been altogether satisfactory. The principal defects reported have been overcrowding, defective ventilation, and excessive dampness of living quarters. All these defects are serious on the long trans-Pacific voyages, and as they are remediable, the proper steps should be taken to correct them.

Outbreaks of contagious disease, especially the eruptive fevers, have occurred frequently on the voyages to Manila. Greater care is necessary to prevent these epidemics, and recommendation has accordingly been made for a change in the transport regulations so as to prevent the introduction of contagion on transports.

## BOARD FOR THE STUDY OF TROPICAL DISEASES.

Since the last report the personnel of the board has been entirely changed, Captain Ashburn and Lieutenant Craig, whose tours of foreign service had expired, having been relieved by Captain Phalen and Lieutenant Nichols. The work of the board has continued to be of the same high character.

The following subjects were systematically studied:

### AMEBAS.

It will be remembered that the first board had concluded that *entamœba dysenteriæ* may be readily distinguished from *entamœba coli*. The present board reports as follows:

> These cultures have been studied with great care in connection with amœbæ found in stools, with the result that we were unable in either case to find constant characteristics to at all warrant a differentiation into species. Still less do we feel that the appearance of an amœba can be relied upon to determine its pathogenicity. We do not doubt the probability of a multiplicity of species, but their differentiation is work for the expert zoologist, and until such work has been done and the contrary established, it is our opinion that all amœbæ should be regarded as potentially pathogenic.

### PARAGONIMIASIS.

Four cases of pulmonary paragonimiasis (endemic blood spitting) have been discovered in a company of Philippine Scouts serving in Samar, and two more in another company serving at the same station. Inquiries addressed to the medical officers of all scout posts have so far failed to elicit any more cases of the disease.

### SCHISTOSOMIASIS.

A fatal case of infection with the *Schistosomum japonicum* was also observed in a Filipino scout who had never been out of the islands; it is evident, therefore, that in the diagnosis of obscure bowel troubles in the Philippines this disease must not be lost sight of.

### FILIARIASIS.

A case of chylocele, with probably a beginning varicose groin gland and elephantiasis of the right leg, found in a native whose blood contained *filaria philippinensis*, would seem to indicate that this new filaria is pathogenic.

### OIDIOMYCOSIS.

The board believes that infections by blastomyces and allied organisms are quite frequent in the Philippines in both man and domestic animals, producing lesions of the skin, glandular tissues, and lungs.

Observations upon the comparative staining reactions of *B. lepræ* and *B. tuberculosis*, resulting in the conclusion that neither stains nor decolorizes more readily than the other, and that it is impossible to differentiate these organisms by the methods employed.

Examination of the feces of the insane, with reference to the presence of *hymenolepis nana*. None were found in 28 cases examined, but a large and varied number of intestinal parasites were demonstrated, 23 of the 28 examined being infected with one or more parasites.

Cultivation of balantidium coli: Wright's stain best method.

Madura foot.

Surra.

Kala-azar: Leishman-Donovan bodies and Wright's bodies not found here as yet.

Rabies: Investigation emphasizes the diagnostic value of *negri* bodies.

Bilharzia disease.

Beriberi: Exclusive diet of rice and oxalic acid used with four monkeys for four months produced no symptoms of the disease.

A comparative study of Tsutsugamushi disease and spotted fever of Montana.

### POMPHOLYX.

The board called attention to the wide dissemination of this disease in the Tropics. It estimates that 50 per cent of persons in the Tropics suffer from this affection, which is often passed over as prickly heat, dhobie itch, or eczema, etc.

The valuable work already done by this board is generally recognized and acknowledged. The field of its labors is wide and largely uncultivated. Much remains to be done, and every encouragement should be given our best men to become investigators into the nature of tropical diseases.

## FIELD MEDICAL EQUIPMENT BOARD.

The board of officers appointed by paragraph 5, S. O. No. 262, War Department, November 7, 1907, has met from time to time during the year and although it has not completed its work the following questions have been definitely settled:

1. *Hospital tents.*—After examining several types of tents intended for use in hot climates the board will recommend the Knight tent as meeting the requirements better than any other type submitted.

2. *Field mosquito net.*—The net devised by Captain Vedder, Medical Corps, U. S. Army, for use with the shelter tent, was examined and, with slight modifications, will be recommended for adoption for use in the Army.

3. *Pack saddle.*—The board examined a number of saddles and panniers, none of which appeared to be suited to the requirements of the Medical Department. Therefore a special pannier was devised by the board for use with the Pulman aparejo. This pannier is a modification of the Pulman pannier, but, unlike the latter, can be so adjusted as to accommodate packages of various shapes and dimensions. Twenty-four (12 sets) of these panniers are being manufactured by the quartermaster's department for trial with the troops.

4. *Four-wheeled ambulance.*—After considerable study of the problem and correspondence with various vehicle manufacturers the board finally decided to have the body of the present type of ambulance modified as follows:

The heavy, fixed top was removed and replaced by a removable and much stronger top, consisting of five heavy bows held in position by staples on outside of body of ambulance and braced by a ridgepole and two side rails to give it the necessary rigidity, this framework to be covered by a waterproof canvas top.

The top so constructed is much lighter and can be removed in a few minutes, and much space is economized in shipping.

The ambulance is designed to carry four patients on litters or eight sitting. The litters, both upper and lower, are suspended by spiral springs from the central uprights and sides of the ambulance, adequate provision being made to limit motion from side to side. These springs are, it is believed, a great improvement and make it possible to transport patients over very rough roads without discomfort.

The four seats of the present type of ambulance have been replaced by two seats, one on each side and attached in a manner similar to those now used.

The jockey box has been divided into two compartments by a central front-to-rear partition. One compartment is to be used for holding the ambulance boxes of stores and dressings, while the other is for use of the ambulance driver.

The method of attaching the tongue of the ambulance has been modified so that the danger of breaking has been reduced to a minimum.

The springs of the water cans have been modified in order to afford greater security when going over bushes or other obstructions.

The footboard in front of body has been strengthened by the addition of iron braces extending from the sills of body.

It was not deemed advisable to change the type or weight of the running gear of the ambulance, as it is the opinion of the board that it is now as light as it can be made consistent with safety.

The above changes reduce the weight somewhat, however, and at the same time make the ambulance a much more desirable vehicle for transporting sick and wounded.

5. *Ambulance cart.*—In addition to the modified four-wheeled ambulance described above, the board has devised a two-wheeled ambulance.

This is not intended to take the place of the large vehicle, but to supplement the latter. It is believed that it can be used on rough roads and across country which would be impracticable for the four-wheeled ambulance. It is designated to carry two patients on litters or four sitting, and may be drawn by either one or two horses. It is also provided with a removable top similar to that on the large ambulance.

## DRILL REGULATIONS.

A new and revised edition of the "Drill Regulations and Outlines of First Aid for the Hospital Corps, U. S. Army," has been prepared and issued to replace that of 1904. The principal changes have been the incorporation of an adaptation of so much of the Drill Regulations for the Hospital Corps, U. S. Navy, as relates to the use of the Stokes litter on transports and hospital ships; an entirely new set of illustrations replacing those of the old regulations, which were very defective; a few changes of method in the line of improvement, and the correction of errors.

## MEDICAL DEPARTMENT.

The act to increase the efficiency of the Medical Department of the U. S. Army, approved April 23, 1908, provides that the Medical Department shall consist of a Medical Corps, and a Medical Reserve Corps; and the Hospital Corps, the nurse corps, and dental surgeons as now authorized by law.

### MEDICAL CORPS.

The number of officers of the regular corps is increased from 322 to 445. The act also provides that the increase in the grades of colonel, lieutenant-colonel, and major shall be filled by promotion each year of not to exceed 2 lieutenant-colonels to be colonels, 3 majors to be lieutenant-colonels, 14 captains to be majors, and of the increase in the grade of first lieutenant not more than 25 per cent of the total of such increase shall be appointed in any one calendar year. The new organization can not, therefore, be completed earlier than January 1, 1911. The strength of the Medical Corps will then finally constitute 44 per cent of the number required for the service in the front and rear for an army of 100,000 men in time of war.

Immediately following the approval of the act, the officers of the Medical Department, other than the Surgeon-General, were recommissioned in the corresponding grades in the Medical Corps established by the act in the order of their seniority and without loss of relative rank in the Army as follows: Assistant surgeons-general with rank of colonel, as colonel; deputy surgeons-general with rank of lieutenant-colonel, as lieutenant-colonels; surgeons with rank of major, as majors; assistant surgeons who at that date had served three or more years, as captains; and assistant surgeons who at that date had served less than three years, as first lieutenants.

The provisions of the act concerning examinations for promotion constitute a radical departure from the system heretofore in force. Majors who fail in their examination are now debarred from promotion, and captains and first lieutenants who are unable to demonstrate their professional efficiency before the promotion boards are given an honorable discharge and a year's pay.

It is believed that the new system rigorously carried out will provide a proper and efficient method for the elimination of officers who have shown a lack of aptitude for the military service, or who through loss of interest in their professional and other duties are no longer qualified to perform the services required of them.

The scope of the examination for captains and lieutenants is the same as heretofore and that of majors covers subjects that pertain especially to the duties of the higher sanitary and administrative officers of the Medical Corps.

The following table exhibits the loss of medical officers during the fiscal year:

| | Colonels. | Lieutenant-colonels. | Majors. | Captains. | First lieutenants. | Total. |
|---|---|---|---|---|---|---|
| Retired from active service | 1 | 2 | 3 | ..... | 1 | 7 |
| Resigned | ..... | ..... | 1 | 2 | 1 | 4 |
| Died | ..... | ..... | 1 | ..... | ..... | 1 |
| Aggregate | 1 | 2 | 5 | 2 | 2 | 12 |

The additional major and surgeon provided by the act of March 2, 1907, lapsed with the death of Maj. James Carroll, surgeon, U. S. Army, for whom the extra number was created. The number of medical officers in service on June 30, 1908, was 301, leaving 55 vacancies at that date.

From July 1, 1907, to April 22, 1908, the following promotions were made: One lieutenant-colonel, deputy surgeon-general, to be colonel, assistant surgeon-general; 2 majors, surgeons, to be lieutenant-colonels, deputy surgeons-general; 4 captains, assistant surgeons, to be majors, surgeons; and 21 first lieutenants, assistant surgeons, to be captains, assistant surgeons.

From April 22, 1908, to June 30, 1908, the following promotions were made: Two lieutenant-colonels to be colonels; 6 majors to be lieutenant-colonels; 19 captains to be majors, and 34 first lieutenants to be captains.

The promotion of 1 major to be lieutenant-colonel and 3 captains to be majors have not yet been actually made, but when commissioned their rank will antedate June 30, 1908, the vacancies having occurred prior to that date.

After completing the full course of instruction at the Army Medical School and passing the qualifying examination, 10 candidates for the Medical Corps were appointed first lieutenants.

One contract surgeon eligible under the provisions of the act of April 23, 1908, was examined, found qualified, appointed first lieutenant, and immediately retired from active service on account of age. Thirty first lieutenants having completed three years' service at the time of the passage of the reorganization act were promoted to the grade of captain subject to examination, it being impracticable on account of the lack of mileage funds to order them up for examination prior to July 1, 1908.

Three majors examined for promotion were found not qualified professionally, and the findings having been confirmed by a board of review, they were debarred by law from further promotion.

At the preliminary examination held May 4, 1908, 9 candidates were found qualified and will be commissioned in the Reserve Corps and ordered to the Army Medical School for a course of instruction, afterwards being commissioned in the regular corps in case they demonstrate their fitness therefor.

The increased inducements now offered for the Medical Corps have attracted more men than was the case under former conditions, and there is every prospect of obtaining a large class of candidates for the next session of the Army Medical School.

Twenty-one vacancies remain from the old organization; these and the 34 vacancies authorized by the new act will not in all probability be filled this year, but it is hoped that as soon as the better inducements become more generally known throughout the medical profession a larger number of candidates for the Medical Corps will present themselves for examination.

## MEDICAL RESERVE CORPS.

As soon after the approval of the act to increase the efficiency of the Medical Department, as the necessary preliminaries incident to their change of status could be completed, 160 contract surgeons employed by the War Department under standard contracts made with them by the Surgeon-General, were recommended for commissions in the Medical Reserve Corps. These commissions bear the date of July 7, 1908. All these officers of the Reserve Corps, except one who did not desire active service at present, were recommended for and have been given active employment with the Army at the stations at which they were serving at the time they were commissioned. Four of the successful candidates at the recent preliminary examination for the Medical Corps were also commissioned in the Medical Reserve Corps on the same date, and 2 of them, as their services were required, have been given active employment with the Army. In addition, 8 contract surgeons who were serving under the so-called substandard contracts at arsenals and like stations which make demands on but part of their time were also commissioned in the Reserve Corps on the date already mentioned, but have not yet been given active employment therein; all still being employed under their former contracts which provides a less rate of pay than that received by officers of the Reserve Corps, but one believed to be adequate in the circumstances. One surgeon employed under a subcontract is a retired medical officer of the Navy, so, while still employed, he could not accept a commission. By the action detailed above the status of all contract surgeons has been changed to that of commissioned officers and great benefit should ultimately result from correcting the former unpleasant and anomalous positions of these gentlemen.

In order to build up the Reserve Corps with desirable material, a strong effort has also been made to induce prominent physicians, surgeons, hygienists, and laboratory workers throughout the country to head it. It is very gratifying to be able to state that notable success has attended this plan, as the patriotism of a large percentage of the doctors communicated with has prompted favorable action on their part.

It is, however, unreasonable to expect that medical men should be more self-sacrificing than their contemporaries in other professions,

and it will probably become necessary at some time in the future to offer financial compensation as a retainer for reserve officers, especially should it prove desirable to ask these officers, or some portion of them, to come out for training for a short period each year.

This training would not be required of the eminent medical men who have already accepted commissions on the inactive list of the reserve corps and who could not be expected to sacrifice the time from their professional work, but would be highly desirable for the younger officers not yet established in practice.

### CONTRACT SURGEONS.

There were 177 contract surgeons in service at the close of the fiscal year ending June 30, 1907. During the past fiscal year contracts were made with 34 physicians, while 31 contracts were annulled and 1 was terminated by death, leaving 179 in service June 30, 1908. Contract Surg. T. Ogier Hutson, U. S. Army, was killed January 8, 1908, near Gordon, Ga., by falling from a railroad train. Nearly all of the contract surgeons in service at the close of the fiscal year have been appointed first lieutenants in the Medical Reserve Corps. The contracts of all those not so appointed have been or will be annulled as soon as the necessary arrangements can be made. Ten remain under contract at present. The great shortage of medical officers has made it extremely difficult to supply the maneuver camps. In fact, it has been impossible to do so in anything like the numbers required by regulations. In order to make medical officers available so that the sick would not actually suffer from lack of medical attendance at such camps, authority for the employment of civilian physicians under contract for the maneuver period, at points where their services could be obtained, has been very generally given to chief surgeons of departments. The exact number of physicians temporarily so employed can not be stated at this date.

### DENTAL SURGEONS.

Thirty-one dental surgeons are allowed by existing law, 1 additional to the 30 previously employed having been authorized for the past fiscal year, and for the present one. One contract was annulled and two were made. Thirteen dental surgeons are serving in the Philippine Islands, 2 in Cuba, and 16 in the United States.

### ARMY MEDICAL SCHOOL.

The twelfth session began October 1, 1907, and closed May 31, 1908.

The number of student candidates admitted was 10, and of medical officers of the militia (under provision of G. O. No. 139, 1905, and G. O. No. 134, 1907) 5.

The 10 student candidates completed the course and were awarded certificates of proficiency. Of the medical officers of the militia, 2 failed to complete the course, 1 on account of sickness and the other upon his own request to be relieved from attendance. Of the remaining 3, 1 failed to pass the examination, so that only 2 were awarded certificates of proficiency.

The following table shows the subjects taught, the hours of instruction in each subject, and the names of the instructors:

| No. | Hours. | Subject. | Instructor. | Valuation. | |
|---|---|---|---|---|---|
| | | | | Maximum. | Minimum. |
| 1 | 112 | Duties of medical officers, medical department administration, and customs of the service. | Maj. Wm. H. Arthur and Capt. B. K. Ashford. | 1,000 | 800 |
| 2 | 280 | Clinical microscopy and bacteriology | Capt. F. F. Russell | 900 | 720 |
| 3 | 23 | Military hygiene | Col. V. Havard | 800 | 640 |
| 4 | 22 | Military surgery | Maj. F. A. Winter | 800 | 640 |
| 5 | 24 | Military and tropical medicine | Maj. W. D. McCaw | 800 | 640 |
| 6 | 170 | Sanitary chemistry | Capt. C. R. Darnall | 600 | 480 |
| 7 | 58 | Hospital corps drill and field work | Capt. B. K. Ashford | 500 | 400 |
| 8 | 24 | Operative surgery | Capt. W. D. Webb | 400 | 320 |
| 9 | 52 | Ophthalmology and optometry | Maj. W. D. Crosby | 400 | 320 |
| 10 | 10 | Roentgen-ray work | Capt. W. D. Webb | 300 | 240 |

In addition to the above the following instruction was also given:

Twenty hours in equitation at Fort Myer, Va., by Capt. E. B. Cassatt, Thirteenth Cavalry, and Second Lieut. B. T. Merchant, Thirteenth Cavalry.

A series of six lectures on military law by Gen. Geo. B. Davis, Judge-Advocate-General, U. S. Army, and Maj. John B. Porter, Judge-Advocate-General's Department.

A series of three lectures on "Parasites in man" by Dr. C. W. Stiles, Public Health and Marine-Hospital Service.

A series of four clinics on "Insanity" at the Government Hospital for the Insane, by Dr. Wm. A. White.

A series of lectures on "Mosquitoes" by Miss C. Ludlow.

A lecture on "Bacterial vaccines" by Lieutenant-Colonel Leishman, Royal Army Medical Corps.

The class during the session also attended a series of surgical clinics given by Maj. Wm. H. Arthur at the general hospital, Washington Barracks.

The graduating examination began May 18 and the closing exercises, including the award of diplomas, were held May 29.

Of the 10 student candidates 6 graduated with honor, having attained a general average of more than 90 per cent of all possible marks. This is the best record so far made in this school. Not only did the students excel in their studies, but their conduct and deportment were also at all times irreproachable.

The Hoff medal for the highest standing in the graduating class was awarded to Dr. Mahlon Ashford.

The final examination for commission in the Medical Corps began June 1 and closed June 6. The candidates consisted of the 10 student graduates. They were all found qualified, physically and mentally, and recommended for commission as first lieutenants in the Medical Corps.

The changes made since the last session by G. O. No. 134, War Department, 1907, in the scope of the preliminary and final examinations are believed to be distinct improvements on the former methods and clearly in the interest of the service.

There is also every reason to hope that the much brighter prospects opened out to young graduates from our best medical schools by the recent reorganization of the Medical Corps will soon fill up this school to its full capacity.

Since the last session of the school specimens of the field medical equipment of our own and foreign armies have been arranged for exhibition in one of the rooms of the school section of the museum. Much useful and interesting material has thus been made available for the practical instruction of students and medical officers.

## HOSPITAL CORPS.

At date of last report, June 30, 1907, the strength of the hospital corps was as follows:

| | |
|---|---|
| Sergeants, first class | 266 |
| Sergeants | 289 |
| Corporals | 20 |
| Privates, first class | 1,468 |
| Privates | 1,276 |
| Total | 3,319 |

Since then it has gained—

| | |
|---|---|
| By enlistment | 1,065 |
| By transfer | 968 |
| Return from desertion | 69 |

And lost during the same period—

| | |
|---|---|
| By discharge by expiration of term of service | 1,227 |
| By discharge by order | 187 |
| By discharge by sentence general court-martial | 76 |
| By discharge by surgeon's certificate of disability | 83 |
| By transfer to line | 36 |
| By retirement | 18 |
| By death due to disease | 14 |
| By death due to suicide | 2 |
| By death due to drowning | 1 |
| By death due to asphyxiation | 1 |
| By desertion | 245 |

Leaving in service, June 30, 1908—

| | |
|---|---|
| Sergeants, first class | 277 |
| Sergeants | 297 |
| Corporals | 17 |
| Privates, first class | 1,480 |
| Privates | 1,460 |
| Total | 3,531 |

Total number of losses during the year, 1,890; gain, 2,102.

Of the applicants who were examined in June, 1907, for the position of sergeant, first class, 32 were appointed, filling the vacancies in that grade existing up to the latter part of August, 1907. Comparatively few vacancies occurred in this grade up to the spring of 1908, and as the needs of the service seemed to have been sufficiently supplied with this class of noncommissioned officers, an examination for promotion was not deemed necessary in the spring. As, however, by the end of the fiscal year the number of vacancies had increased to about 25, with a prospect of a further increase in the near future, it has been arranged to hold an examination in the middle of November. Information to that effect has been sent to the chief surgeon of the Philippines Division, and to the chief surgeons in the United States and Cuba.

Examinations for promotion to the position of sergeant were held in the early part of this year by the chief surgeons of nearly all of the military departments, with the result that all existing vacancies in that grade were filled. The names of a considerable number of successful candidates had, moreover, to be placed upon the eligible list, and they will be recommended for appointment whenever vacancies may occur.

The number of sergeants, first class, allowed by law (300) appears to meet all the demands of the service under peace conditions. This is, however, not the case with sergeants and corporals, the allowance of which is 300 for the former and 20 for the latter. An increase of 50 sergeants and 20 corporals has been recommended in the estimates for the fiscal year ending June 30, 1910, and is considered to be very conservative, particularly so as the total number of hospital corps men allowed under existing laws and regulations (3,500) is not thereby increased. This additional number of sergeants and corporals will enable this office to meet a constantly increasing demand for this class of noncommissioned officers, and also provide for many emergency calls.

An increase in the number of corporals is particularly desirable, as many hospital corps men, though worthy in every other respect, are not able to pass the required examination for promotion to the grades of sergeant and sergeant, first class. Their early education stands in the way of deriving all the advantages from the courses of instruction given to all hospital corps men, and this prevents them from making a creditable showing on examination in technical subjects which are prerequisite for appointment to the higher grades in the corps. Many of these men, however, are excellent and experienced soldiers, good disciplinarians, and in many respects would be of great value to the corps as noncommissioned officers. A further reason for the proposed increases in the grades of sergeants and corporals is the necessity of maintaining the proper proportion of noncommissioned officers to privates—1 to 4—provided by Army Regulations, 1435.

A school for the training of selected soldiers of the Philippine Scouts in the duties of the hospital corps was established at Cotabato, Mindanao, in August, 1907, by the commanding general, Philippines Division, with the object of educating enough specially qualified scouts to perform their own hospital work, which would otherwise devolve upon regular hospital corps men. No doubt is entertained of the success of this work and of its great value both to the hospital corps of the Regular Army and to the Philippine Scouts.

The stations of the four regular instruction companies of the corps have been the same as last year except that Company B was transferred in July, 1907, from the post of Presidio to the general hospital, Presidio.

Pursuant to orders from the Headquarters Department of Luzon, a detachment consisting of 5 noncommissioned officers and 30 men of Company D, Hospital Corps, under command of Capt. Perry L. Boyer, Medical Corps, was sent in January, 1908, from Fort Wm. McKinley to Panay, Rizal, for temporary duty during the division meet at that place—going and returning by marching.

During the summer of 1907 one-half of Company C, Hospital Corps, under command of Capt. Bailey K. Ashford, was sent to Camp Perry, Port Clinton, Ohio, for duty during the national match to be held on the Ohio State rifle range at that place.

For the summer maneuvers of 1908 the two companies of the Hospital Corps in the United States—C and B—were divided into halves. Those of Company C were sent from the Army General Hospital, Washington Barracks, to the camps at Pine Plains, N. Y., Fort Benjamin Harrison, Ind., Chickamauga Park, Ga., and Fort Riley, Kans.; and those from Company B from the general hospital, Presidio, of San Francisco, to the camps at Leon Springs, Tex., American Lake, Wash., and Atascadero Ranch, Cal.

For some time past a number of hospital corps men, showing special aptitude for their work, have been assigned to the schools for bakers and cooks at Washington Barracks and at the Presidio of San Francisco, for a four months' course of instruction. After graduation therefrom they were sent to posts where specially educated cooks are needed. The results have been satisfactory in the main and to the advantage of hospital management.

The readjustment of the pay of the enlisted men of the Army (act of May 11, 1908) has resulted in retaining in the hospital corps a number of trained men who otherwise would have been lost to the service, and in returning to the corps a number of equally well-trained men who had already left the service. The number of applications from civil life for first enlistment has also considerably increased, thus enabling the department to select a much better class than was formerly the case.

One very grave condition confronts the hospital corps, however, which may result in seriously undermining its efficiency. Applications from privates in the hospital corps are now frequently received for transfer back to the line, on the plea that they will receive better pay there than in the hospital corps. In illustration of this fact, attention is particularly invited to part of an indorsement of the commanding general, army of Cuban pacification, on the application of a private, first class, hospital corps, for transfer to the coast artillery, because "the new pay schedule will give him an opportunity to better himself materially in the line."

A soldier, like everyone else, is doing duty for a money consideration, and it is undoubtedly his privilege to seek that service which will yield him the greatest compensation, and if, as indicated by this paper, it is to the soldier's advantage to serve in the line of the Army under the new pay table, it is going to be an impossibility to obtain voluntary transfers from the line to the hospital corps of desirable men, as it has been very difficult with the pay in favor of the hospital corps over the line, to secure a sufficient number of transfers to keep up the complement in the hospital corps.

This phase of the question should receive the consideration of the Department, with a view to a proper solution of the question that is raised. The efficiency of the hospital corps is of the utmost moment to all branches of the service, and we should have in it only such men as are adapted to its peculiar requirements, and the attractions of the corps should be such as to retain excellent men, such as the writer of this communication is reported to be.

THOMAS H. BARRY,
*Major-General, U. S. Army, Commanding.*

Twenty-four hospital corps men, 6 noncommissioned officers, and 18 privates, under command of Captain Ashford, Medical Depart-

ment, were sent to Hattiesburg, Miss., and assisted in the relief work to alleviate the sufferings caused by the cyclone last April.

Private Robert L. Fisher, Hospital Corps, was awarded a certificate of merit December 11, 1907, for rescuing a comrade from drowning, at the risk of his own life, while a private, Battery A, First Field Artillery, at Medicine Creek, near Fort Sill, Okla.

## THE NURSE CORPS.

During the fiscal year 389 nurses applied for admission to the Army Nurse Corps. There were 40 discharges and 25 appointments; of these 6 had had previous service.

On June 30, 1908, there were 81 nurses in the corps, distributed as follows:

| | |
|---|---|
| General hospital, Presidio of San Francisco, Cal | 30 |
| Detailed to duty on the transport *Crook* | 2 |
| General hospital, Fort Bayard, N. Mex | 20 |
| Division hospital, Manila, P. I | 16 |
| Zamboanga, Mindanao | 4 |
| Camp Keithley, Mindanao | 3 |
| Fort William McKinley | 4 |
| En route to Philippine Islands | 2 |

The difficulty, always sufficiently great, of securing desirable applicants increases rather than diminishes, and the deficit caused thereby reached its climax at the close of the fiscal year, when there were 19 vacancies in the nurse corps, only 2 of which it was possible to fill. Not since August 1, 1907, has the corps been at its full strength—100 nurses.

During the year an effort was made to ascertain the cause for the manifest unwillingness of nurses to enter the Army Nurse Corps. Data received showed that of those who applied and returned the blanks unfilled, one-third declined service because of the small pay and the long term (three years). Of the remaining two-thirds some begged the question, some were untrained, and the rest gave personal and family considerations.

It is a foregone conclusion that this embarrassing lack will in future be even more insistently evident than in the past. While there are practically no names on the eligible list in this office, the new Navy Nurse Corps has more than 1,000 from which to make a selection, and among these are many faithful and tried ex-army nurses who could not be induced to reenter our service. While the potent charm of novelty must account in a measure for the flocking to the new corps, the above fact is significant when we consider that to-day there are nurses in the Army Nurse Corps who after nearly eleven years of uninterrupted service receive no more pay and have no better position in the corps than the appointees of yesterday.

Added to its compelling novelty, the Navy Nurse Corps offers some substantial advantages to its nurses, all of which, however, have been from time to time the subject of recommendations from this office for our own corps, i. e., cumulative leave up to three months in three years, quarters, subsistence, and laundry for superintendent and nurses without cost to them, and much more liberal travel allowances than are provided for army nurses.

This table includes 1 case in which the patient died en route to the hospital, 32 cases in which the patients were under treatment less than one month, and 17 cases which were found on admission or readmission to be arrested. The benefit of sanatorium treatment is more satisfactorily exhibited in the following table, which gives the results obtained in the cases of all patients with pulmonary tuberculosis who remained under treatment at least six months, excepting 9 cases found to be arrested upon admission:

| Class. | Number. | Apparently cured. | | Arrested. | | Improved. | | Unimproved. | | Died. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number. | Per cent. | Number. | Per cent. | Number. | Per cent. | Number. | Per cent. | Number. | Per cent. |
| Incipient | 22 | 16 | 72.72 | 4 | 18.18 | 1 | 4.54 | 1 | 4.54 | ..... | ..... |
| Moderately advanced | 225 | 26 | 11.55 | 111 | 49.33 | 35 | 15.55 | 51 | 22.66 | 2 | 0.88 |
| Far advanced | 136 | 1 | .73 | 28 | 20.58 | 34 | 25.00 | 62 | 45.58 | 11 | 8.09 |
| Acute miliary | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total | 383 | 43 | 11.22 | 143 | 37.33 | 70 | 18.27 | 114 | 29.76 | 13 | 3.39 |

Fifty-six deaths occurred during the year, of which 1 was due to genito-urinary disease and 1 to broncho-pneumonia. The remaining 54 deaths were caused by tuberculosis of the lungs with or without implication of other organs. As is invariably the case, the large majority of deaths occurred in recently admitted cases. This is shown in the following table, which gives the duration of treatment in fatal cases of tuberculosis:

| | Weeks— | | | | Months— | | Years— | | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 2. | 3. | 4. | 2 to 6. | 7 to 12. | 2. | 3. | 4. | |
| Time of death of 39 cases under continuous treatment | 3 | 1 | 2 | 8 | 17 | 4 | 3 | 1 | ... | 39 |
| Time of death of 15 cases not under continuous treatment: | | | | | | | | | | |
| Reckoned from last admission | 2 | ... | ... | 2 | 6 | 3 | 2 | ... | ... | 15 |
| Reckoned from original admission | ... | ... | ... | ... | ..... | 2 | 5 | 2 | 6 | (15) |
| Total [a] | ... | ... | ... | ... | ..... | ..... | ... | ... | ... | 54 |

[a] Does not include 1 case which died en route to the hospital.

## UNITED STATES ARMY GENERAL HOSPITAL, WASHINGTON BARRACKS, D. C.

The buildings now occupied are badly situated and are in need of extensive repairs, but as they are to be abandoned at an early date no expenditures have been recommended. They have, however, been kept clean and as presentable as possible.

Considerable difficulty has been experienced in subsisting the patients on the 30-cent commutation of rations, especially in summer, when the purchase of ice necessary to preserve food supplies consumes a large proportion of the available funds.

The staff of the hospital has been most faithful. Many of the hospital corps men have developed into excellent nurses, operating-room assistants, and cooks, and it has been possible to care for seriously ill cases very efficiently without female nurses. There has been no complaint of neglect or roughness on the part of any nurse; in fact many

of the officers treated during the year have volunteered to express their appreciation of the gentleness and attentive care of the enlisted nurses.

The hospital has served as the post hospital for Washington Barracks. The number of patients treated during 1907 was nearly double that of the previous year. The number of officers admitted for observation and treatment continues to increase, 81 being admitted during the past year, which with the 15 remaining from 1906 gives a total of 96 treated during the period mentioned. Fifteen officers were on sick report at the end of 1907.

There were 658 admissions to hospital during 1907, divided as follows: Medical 502, venereal 64, surgical 92, which with the 38 remaining under treatment from last year gives a total of 696 cases treated. Eleven deaths occurred during the year.

There were 61 major and 36 minor operations performed, 93 of which were reported as successful and 4 partially so.

The work on the new hospital is progressing satisfactorily. The main building will probably be completed in August or September of this year, but certain accessory buildings will have to be put up before the hospital can be occupied.

### ARMY AND NAVY GENERAL HOSPITAL, HOT SPRINGS, ARK.

During the past calendar year 721 patients were treated in this hospital, of which 19 were officers of the Army and 2 of the Navy. The principal causes of admission were as follows:

| | |
|---|---|
| Rheumatism: | |
| Chronic articular | 104 |
| Subacute articular | 35 |
| Acute | 17 |
| Chronic muscular | 99 |
| Subacute muscular | 11 |
| Nephritis | 17 |
| Arthritis, rheumatic, gouty | 18 |
| Lumbago | 9 |
| Stomach trouble | 52 |
| Sciatica | 27 |
| Neuritis | 11 |
| Neurasthenia | 8 |

Of the total number of patients treated, 583 were returned to duty or returned to their homes, 30 were discharged for disability, 8 died, 13 were otherwise disposed of, and 87 remained under treatment at the end of the year.

### PROVIDENCE HOSPITAL.

The act approved March 4, 1907, having appropriated $19,000 for the support and medical treatment of destitute patients in the city of Washington, D. C., under a contract to be made with Providence Hospital by the Surgeon-General of the Army, the relief afforded was as follows:

| | |
|---|---|
| Patients in hospital July 1, 1907 | 95 |
| Admitted during the year | 1,140 |
| Total number treated | 1,235 |
| Average number admitted per month | 103 |
| Number remaining in hospital June 30, 1908 | 87 |

| | |
|---|---|
| Total number of days' treatment afforded | 38,200 |
| Average number of days' treatment per patient | 31 |
| Average number of patients treated per day | 104 |
| Longest term of treatment (days) | 366 |
| Shortest term of treatment (days) | 1 |
| Number of patients in hospital during the whole year | 4 |

## HOSPITAL CONSTRUCTION AND REPAIR.

During the last fiscal year plans and specifications were prepared in this office for new hospitals to be erected at Fort Douglas, Utah, Fort Mackenzie, Wyo., San Juan, P. R., and Whipple Barracks, Ariz. Plans and specifications were also prepared for enlarging the hospitals at Fort Andrews, Mass., Fort Brady, Mich., Jefferson Barracks, Mo., Fort Lincoln, N. Dak., Fort Logan, Colo., Fort Logan H. Roots, Ark., Fort Riley, Kans., Fort Slocum, N. Y., and Fort Snelling, Minn.

Contracts were entered into for the erection of new hospitals at Fort Douglas, Utah, Fort Mackenzie, Wyo., and Whipple Barracks, Ariz., but no proposals were received for the new hospital to be erected at San Juan, P. R., and Congress reappropriated the funds for the next fiscal year. It is understood that proposals are to be invited for the erection of various public buildings at San Juan in the near future, and proposals will be invited at or about the same time for the erection of the new hospital.

Contracts were also entered into for enlarging the hospitals at Fort Andrews, Mass., Fort Lincoln, N. Dak., Fort Logan, Colo., and Fort Riley, Kans., and additions to the hospitals at Fort Leavenworth, Kans., Fort Logan, Colo., Fort Sheridan, Ill., and Fort Slocum, N. Y., were completed.

Proposals were invited on two different occasions for enlarging the hospital at Fort Logan H. Roots, Ark., but contract could not be entered into for the reason that the lowest bid received exceeded the limit fixed by law. Section 1136 of the Revised Statutes of the United States limits the cost of permanent structures to $20,000, unless special authority is obtained from Congress, and the lowest bid received for enlarging the hospital at Fort Logan H. Roots called for nearly $40,000. After due consideration it is thought that it would be more economical to erect a new modern hospital at this post than to enlarge and modernize the present structure.

A new power house was erected for the general hospital, Presidio of San Francisco, Cal. Funds were also provided to repair and improve this general hospital, to enlarge and improve the hospital accommodations in the Philippine Islands, to repair and improve the United States Army General Hospital, Fort Bayard, N. Mex., to keep the building used as a hospital at San Juan, P. R., in a sanitary condition, for all necessary repairs at the Army and Navy General Hospital, Hot Springs, Ark., and for such repairs as were absolutely needed to keep the general hospital, Washington Barracks, D. C., in a suitable condition for occupancy.

In addition to the above, all hospitals at military posts already established and occupied, were kept in proper repair and improved so far as funds would permit.

New quarters for hospital corps sergeants, first class, were authorized for the United States Army General Hospital, Fort Bayard, N.

Mex., for Fort Riley, Kans., Fort Sam Houston, Tex., and for the Walter Reed United States Army General Hospital, District of Columbia. Those for the general hospitals and for Fort Riley, Kans., are double sets, and that at Fort Sam Houston, Tex., is a single set. Plans and specifications were prepared in this office for the quarters for the Walter Reed United States Army General Hospital, and for Fort Riley, Kans., and Fort Sam Houston, Tex. Contracts were entered into for each one of these buildings, and the quarters have been completed at the United States Army General Hospital, Fort Bayard, N. Mex., the Walter Reed United States Army General Hospital, and Fort Sam Houston, Tex. The double set at Fort Riley, Kans., is in course of erection and will be completed in the near future. In addition to the above, the quarters at military posts, already established and occupied, have been repaired, improved, and kept in good condition so far as funds would permit.

Owing to the increased cost of material and labor and the excessive cost of construction at some posts, it was not possible to meet all requirements from the funds appropriated, and even the increased appropriation for the coming fiscal year will not meet the demand for new quarters at various posts where such buildings are absolutely necessary. The enlargement of military posts and the increased hospital accommodations required for the care of the sick render it necessary to provide double sets of hospital corps sergeants' quarters at the large posts, recruiting depots, and general hospitals.

## MEDICAL AND HOSPITAL SUPPLIES.

The amount estimated for by this office for the fiscal year ending June 30, 1908, was $650,000. This was reduced to $644,286 by the War Department, which amount was appropriated.

On account of the extraordinary demands for supplies that have been made on the medical department since the spring of 1906, the sums that could be allotted from the medical and hospital appropriation for the purchase of supplies were not adequate to meet the demands of the service. During the past year we have been able to supply the Army only by confining our purchases to the absolutely essential articles needed in post administration.

At the beginning of the year the stock in all our supply depots was very much reduced, but during the year this condition has been greatly improved, and it is believed that with the appropriation for 1909 the stock in all the depots can be brought to normal conditions.

During the year the demand from the Philippines has not been so great as the previous year, although supplies valued at $93,600 have been shipped to that division since the 1st of July, 1907.

The issues of supplies to Cuba have been reduced very much since the initial expenditure in establishing the various posts in that island.

The Globe Building, mentioned in my last report as having been leased for a field medical supply depot, has been occupied, and is admirably adapted for that purpose.

With the cordial support from your office, the Department was able to obtain from the last Congress a special appropriation of $200,000 for the purchase of field equipment. Bids have been asked for and contracts are now being made for the expenditure of this money. It is gratifying to state that the prices obtained on recent

bids are much less than those of a year ago, which will make it possible to do a great deal more toward assembling field equipment with this special appropriation than was anticipated.

The New York depot continues to be the main purchasing depot for regular medical supplies. It also continues to act as the purchasing agent of the Isthmian Canal Commission for medical supplies and equipment.

As will appear from the following tabulation, the pressure upon the medical department during the fiscal year 1908 for stores for the medical supply of other branches of the Government and of the organized militia was somewhat less than during the previous year. All the issues for these purposes are included in this exhibit, together with all of the authorized sales of serviceable stores so far as the latter were of record June 30. The amounts noted represent the first cost only of the stores in question without allowance for expenses of purchase, or losses and depreciations while on the shelves awaiting issue. Some accounts covering these transactions were outstanding June 30, and accordingly the figures here shown, which are approximately complete, considerably exceed those set down in the financial statement at the beginning of this report, which cover settled transactions only:

| | | |
|---|---|---|
| A. Supplies issued to States and Territories for use of the organized militia, under section 1661, Revised Statutes, and appropriations supplementary thereto: | | |
| Georgia | $455.65 | |
| Idaho | 103.17 | |
| Indiana | 437.50 | |
| Iowa | 110.40 | |
| Kansas | 1,010.65 | |
| Massachusetts | 4,989.26 | |
| Michigan | 613.35 | |
| Minnesota | 1,514.61 | |
| Mississippi | 54.10 | |
| Nebraska | 651.30 | |
| New Hampshire | 265.70 | |
| New Jersey | 229.92 | |
| New Mexico | 36.00 | |
| New York | 5,712.50 | |
| North Carolina | 18.40 | |
| Ohio | 232.53 | |
| Oregon | 87.50 | |
| Pennsylvania | 234.50 | |
| Tennessee | 242.08 | |
| Texas | 490.00 | |
| Vermont | 57.96 | |
| Virginia | 166.70 | |
| Washington | 192.00 | |
| Wyoming | 120.00 | |
| | | $18,025.78 |
| B. Sales to States under section 17, act of January 21, 1903 (32 Stats., 778): | | |
| New York | 70.35 | |
| Pennsylvania | 832.27 | |
| | | 902.62 |
| C. Supplies transferred to other Bureaus and Departments of the Government: | | |
| Bureau of Immigration | 1,261.05 | |
| Bureau of Forestry | 347.50 | |
| Navy | 3,094.30 | |
| Quartermaster's Department, U. S. Army | 381.67 | |
| Engineer Department, U. S. Army | .85 | |
| *Isthmian Canal Commission* | 13,963.96 | |
| | | 19,049.33 |

| | |
|---|---|
| D. Supplies issued for relief of sufferers from cyclone in Southern States.. | $3,911.51 |
| E. Sales to the civil government of the Philippine Islands..... | 481.38 |
| F. Sales to civilian employees and civilians with the Army..... | 1,891.46 |
| Total..... | 44,262.08 |

## ARMY MEDICAL MUSEUM.

The total number of specimens in the museum at the end of the fiscal year June 30, 1908, was 34,447. The following statement shows in detail the additions and changes in the different sections:

| | |
|---|---|
| **Pathological section:** | |
| In museum June 30, 1907..... | 12,639 |
| Discarded and donated..... | 29 |
| | 12,610 |
| Received during the year..... | 360 |
| In museum June 30, 1908..... | 12,970 |
| **Anatomical section:** | |
| In museum June 30, 1907..... | 1,203 |
| Discarded..... | 2 |
| | 1,201 |
| Received during the year..... | 1 |
| In museum June 30, 1908..... | 1,202 |
| **Section of comparative anatomy:** | |
| In museum June 30, 1907..... | 813 |
| Discarded and donated..... | 117 |
| In museum June 30, 1908..... | 696 |
| **Microscopical section:** | |
| In museum June 30, 1908..... | 12,916 |
| **Miscellaneous section:** | |
| In museum June 30, 1907..... | 2,997 |
| Discarded and donated..... | 32 |
| | 2,965 |
| Received during the year..... | 81 |
| In museum June 30, 1908..... | 3,046 |
| **Provisional pathological section:** | |
| In museum June 30, 1907..... | 719 |
| Discarded..... | 24 |
| In museum June 30, 1908..... | 695 |
| **Provisional anatomical section:** | |
| In museum June 30, 1908..... | 378 |
| **Photographic series:** | |
| In museum June 30, 1908..... | 2,544 |

RECAPITULATION.

| | |
|---|---|
| Specimens in museum June 30, 1907..... | 34,209 |
| Discarded and donated..... | 204 |
| | 34,005 |
| Added during the year..... | 442 |
| In museum June 30, 1908..... | 34,447 |

## LIBRARY OF THE SURGEON-GENERAL'S OFFICE.

The following table shows the additions made to the library during the fiscal year 1907–8:

| Description. | On hand June 30, 1907. | Added during fiscal year. | Total June 30, 1908. |
|---|---|---|---|
| | *Volumes.* | *Volumes.* | *Volumes.* |
| Medical journals | 50,018 | 1,228 | 51,246 |
| Medical transactions | 8,000 | 214 | 8,214 |
| Bound theses | 2,544 | ..... | 2,544 |
| Bound pamphlets | 2,876 | 10 | 2,886 |
| Other medical books | 98,857 | 1,595 | 100,452 |
| Total | 162,295 | 3,047 | 165,342 |
| Medical theses | 76,380 | 2,214 | 78,594 |
| Medical pamphlets | 209,553 | 3,199 | 212,752 |
| Total | 285,933 | 5,413 | 291,346 |

There were presented to the library during the year 823 books and 4,753 pamphlets and journals.

Volume XIII, second series, of the Index Catalogue, will be ready for distribution at the usual time. The manuscript for Volume XIV is in course of preparation.

## ARTIFICIAL LIMBS.

Under the laws relating to artificial limbs, apparatus, or commutation therefor, orders were given on manufacturers for 27 legs, 2 arms, and 1 foot, and commutation certificates were issued for 155 cases amputated leg, 74 amputated arm, 8 amputated foot, and for 1,631 cases of loss of use of a limb.

Under the act of June 17, 1870, and subsequent amendments thereto, 23,415 disabled soldiers and sailors have been furnished artificial limbs or apparatus, or have received commutation in money as follows:

Total number benefited to June 30, 1908, 23,415; died, 11,188; dropped from rolls, 592; rejected after one or more payments, 567; remaining on rolls at the end of the fiscal year, 11,065.

It is estimated that the sum of $132,000 will be required to pay the claims coming due during the fiscal year ending June 30, 1910.

One hundred and fifty-six appliances were issued during the fiscal year and 594 trusses were furnished and fitted.

## CONCLUSION.

This report is the last which will be signed by the present Surgeon-General, on account of his retirement for age during the present fiscal year, after an incumbency of six years and four months. It seems advisable, therefore, that some statement be made of the policy pursued by his administration and the results which have been accomplished.

It is a matter of common knowledge that the Spanish war found the medical department of the army quite inadequately equipped, both in personnel and material, to meet its obligations, and, in spite *of much excellent* work accomplished with the inadequate means at

hand, it was severely criticised. It was determined, therefore, to make a careful study of the grounds for such criticism, to separate that which was well founded from that which was captious and uninformed, and to make systematic efforts to remedy the defects discovered. Where legislative action was required it was determined to make an energetic and sustained effort to secure it from Congress. Fortunately the materials were at hand for such a study. President McKinley, at the close of the Spanish war, appointed a commission to study its conduct and to make recommendations with a view of correcting defects known to exist in the military organization. This commission, commonly known from the name of its president as the "Dodge Commission," gave special attention to the investigation of the medical department and published in its report a large mass of testimony from every available source concerning it. The conclusions of the commission were accepted as established facts, and its recommendations as an official and authorized statement of the future policy of the medical department. Although the deficiencies noted have been almost wholly corrected, the conclusions and findings of the commission are so important as to justify repetition here. They are as follows:

"*Conclusions:* To sum up, in brief, the evidence submitted shows

1. That at the outbreak of the war the medical department was, in men and materials, altogether unprepared to meet the necessities of the army called out.

2. That as a result of the action through a generation of contracted and contracting methods of administration, it was impossible for the department to operate largely, freely, and without undue regard to cost.

3. That in the absence of a special corps of inspectors and the apparent infrequency of the inspections by [illegible] official reports of the state of [illegible] was not [illegible] as is the [illegible]

4. That [illegible] July was [illegible] in the [illegible] Congress [illegible] in the [illegible] which [illegible]

5. That [illegible] in the [illegible] best [illegible] were [illegible]

6. That [illegible] ferred [illegible] quarantine [illegible] to [illegible] surgeon

7. That [illegible] injury [illegible] inadequate [illegible] are [illegible] best [illegible]

8. That notwithstanding all the manifest errors of omission rather than commission, a vast deal of good work was done by medical officers, high and low, regular and volunteer, and there were unusually few deaths among the wounded and the sick."

A careful analytical study was made of these conclusions, of the seven recommendations, and of the mass of evidence upon which they were based, as well as other reports, criticisms, suggestions, etc., on file. The following are the recommendations of the commission:

"What is needed by the medical department in the future is—

1. A larger force of commissioned medical officers."

In these seven words are stated the first and most essential need of the department, and by far the most difficult to supply. A trained, disciplined, and efficient personnel can not be improvised, in spite of the popular impression to the contrary. It must be brought up with good traditions and esprit de corps which ignores all personal considerations and looks only to the good of the service and the sacred responsibilities intrusted to it. It must be carefully specialized in its training to meet the peculiar needs of military service, and yet broad enough to cope with new conditions and great responsibilities. Therefore, this first recommendation has been the most difficult of execution and the last of all to reach accomplishment in the bill signed by the President on April 23 of this year.

So little was the advice of the commission heeded at the time of the reorganization of the army subsequent to the Spanish war that instead of giving the new enlarged army a sufficient number of medical officers to do the work of the department the increase was so small that it was actually a proportionate reduction, and a large number of civilian physicians had to be employed under contract to make up the deficiency. This device served as a crutch which enabled the organization to go indeed, but which gave no permanent strength or any prospect of successful expansion in time of war. A carefully prepared statement of the needs of the department was laid before Mr. Root, then Secretary of War, on December 24, 1903, and received his cordial indorsement before his retirement from that office a month later. It also received the cordial support of his successor, Secretary Taft, and enlisted to such an extent the interest of the President that in January, 1905, he sent a special message to Congress concerning it. This act, besides increasing the corps by 32 per cent, corrected the disproportionate number in the lower grades which had been introduced into the organization in 1901, and which had destroyed the attractiveness of the medical service by greatly impairing the prospect of promotion. It also introduced a feature of promotion by elimination for the administrative grades of colonel and lieutenant-colonel, by requiring that majors be examined for promotion. It also substituted a medical reserve corps, members of which are commissioned after examination, but called into service only when needed, for the objectionable device of employing civilian physicians under contract who, not being commissioned officers, occupy a position without proper dignity or authority.

"2. Authority to establish in time of war a proper volunteer hospital corps."

This has reference to an unfortunate omission, probably of inadvertence, in the legislation at the beginning of the Spanish war,

authorizing the raising of a volunteer army for which no volunteer hospital corps was provided. The unfortunate results of this omission remain a painful memory to those having experience with the field hospitals of that war. An ample and well organized hospital corps is a feature of the organization prepared by the General Staff as a model for the next volunteer army. There is little danger that this necessary feature will be omitted from any future legislation authorizing the creation of such a force.

"3. A reserve corps of selected trained women nurses ready to serve whenever necessity shall arise, but under ordinary circumstances owing no duty to the War Department, except to report residence at determined intervals."

This has been carried out by the organization of the Army Nurses Reserve Corps, which was created in 1901 along the exact lines proposed.

"4. A year's supply for an army of at least four times the actual strength, of all such medicines, hospital furniture and stores as are not materially damaged by keeping, to be held constantly on hand in the medical supply depots."

A study of this question and of the evidence as to what was lacking in the way of supplies in the hospitals of the Volunteer Army made it evident that the majority of articles of medical supply can always be obtained in the markets of the United States in sufficient quantity, and the shortage at the time of the Spanish war was in the main a defect of transportation and distribution. Every article on the supply table was looked up to determine the available supply procurable immediately or within thirty days, and an estimate made of the amount needed for armies of various sizes. The sources of supply were also investigated. Medical and hospital supplies were thus divided into two classes, of which the first and largest could always be obtained in the United States in sufficient amount, they being the drugs and supplies habitually used by the medical profession. The second list comprised those articles—chiefly field chests and medical supplies and equipment for field use—which are intended to meet special requirements and are not kept in stock by the trade. Of these a reserve supply for war was evidently needed, it having been found that the field chests ordered at the beginning of the Spanish-American war were not delivered by the contractors until after its close.

A beginning had already been made to collect field equipment, and a depot had been established in the basement of the Army Medical Museum and Library building. This depot has been moved into a more commodious and suitable building and the reserve supply has been year by year enlarged and amplified. Medical storehouses for field equipment have also been secured at the old powder depot at St. Louis, where a second field depot has been established. A store of field equipment has been assembled at the medical supply depot at San Francisco and at Manila. A systematic plan for the assembling of field hospitals, complete with ordnance and all quartermaster's supplies, except transportation, but including tentage, has been instituted. These are complete with the exception of a few articles, such as rubber goods, which deteriorate from storage. They can be supplied and the hospitals be ready for shipment in twenty-four hours. Two base hospitals, 10 stationary hospitals, 38 field

hospitals, 78 regimental hospitals, and 7 supply depots are now assembled or in process of assembly at Washington, St. Louis, San Francisco, and Manila.

The liberality of the present Congress in appropriating a fifth of a million dollars for this special purpose will very considerably increase the provision of reserve field equipments.

"5. The charge of transportation to such an extent as will secure prompt shipment and ready delivery of all medical supplies."

This touches the most vital and the most difficult question of military administration. The quartermaster's department is charged with the transportation of supplies of all sorts and for all branches of the army, except such as are carried along with troops in the field. For these the medical department has its own transportation provided, but for transportation from depots and sources of supply, by common carriers, the problem is an administrative one which would be probably no nearer solution if the medical department should be given its own transportation department. The medical department has now, by paragraph 638, F. S. R., entire control of the wagons, trains, vessels, etc., turned over to it and it has the privilege of shipping by express when this mode of rapid transportation is deemed necessary and is feasible. It being recognized that it is impossible for the medical department and other staff departments to have each a distinct quartermaster service of its own, provision has been made in the Field Service Regulations for the appointment of acting quartermasters for medical organizations and for the detail of representatives of the medical department to accompany shipments when necessary en route. In the extensive shipments made by this department to San Francisco at the time of the earthquake and fire in that city, the medical supplies sent in carload lots or by special trains were accompanied by hospital corps detachments, and in the case of trains of medical supplies, by medical officers, and all of these arrived with the utmost promptness. In the case of medical supply trains the officers in command were able to pick up en route a large number of cars of quartermaster's supplies found on the sidings by the way, which were also delivered promptly in San Francisco. It is believed that these provisions give as much autonomy in the question of transportation of supplies as is practicable or necessary and that the medical department will, like other staff and supply departments have to look for any further relief to improvements in the organization and methods of the transportation branch of the quartermaster's department upon which they must all depend.

"6. The simplification of administrative 'paper work,' so that medical officers may be able to more thoroughly discharge their sanitary and strictly medical duties."

The whole matter of reports, returns, etc., required of medical officers in garrison or in the field has been made the subject of careful study to reduce to the minimum permitted by the law and Treasury regulations, the "red tape" which is so burdensome to the volunteer medical officer.

An extension of the card system to the posts has saved the recopying of the reports of sick and wounded in this office and made possible a considerable reduction of clerical force.

A careful study extending over nine months was made of the organization of the Surgeon-General's office with a view of remedying certain

administrative defects which had long been evident. It was found that the work was neither evenly nor logically distributed among the assistants and a vast amount of detail was brought to the chief of the bureau which could be properly and logically transacted by his assistants. This interfered with proper attention to larger affairs and in time of war caused a congestion at the top which was fatal to administrative efficiency. A reorganization of the office was made with a redistribution of the work among the several divisions, which has much facilitated the transaction of current business and made it readily possible to expand the office in war without any rearrangement or confusion, leaving the Surgeon-General free from routine matters or administrative details, so that his time may be given to large affairs. Incidentally to this reorganization rosters of all medical officers have been made out so as to show their stations from entry into service and their proper order for foreign service. It is now possible as a rule to notify officers several months in advance that their turn for foreign service has arrived, and the number of changes of station in the United States has, by foreseeing moves, been constantly reduced with economy alike to the Government and the medical officer.

"7. The securing of such legislation as will authorize all surgeons in medical charge of troops, hospitals, transports, trains, and independent commands to draw from the subsistence department funds for the purchase of such articles of diet as may be necessary to the proper treatment of soldiers too sick to use the army ration. This is to take the place of all commutation of rations to the sick now authorized. Convalescent soldiers traveling on furlough should be furnished transportation, sleeping berths or staterooms, and $1.50 per diem for subsistence in lieu of rations, the soldier not to be held accountable or chargeable for this amount."

The recommendations under this head have been carried out practically as suggested by the commission. It is seen, therefore, that in so far as the Dodge Commission was able to formulate the defects existing in the medical department, these have been corrected. The work of improvement has not, however, been limited to these recommendations.

*Medical supplies.*—The nonexpendable medical supplies on hand were to a very large extent obsolete or unsatisfactory. Many of the instruments in the post hospitals had come down from the time of the civil war and the preantiseptic era, while the field equipment was necessarily purchased in haste wherever it could be found at the time of the Spanish war and was defective in quality and design. A study of this equipment was made, and all of it which was obsolete or unsuitable was condemned.

The hospital corps has been reorganized by the act approved March 3, 1903, and a thorough system of instruction for its members of all grades put in operation. The result has been a very gratifying increase in its efficiency.

At the maneuver camps of 1906, and upon the recommendation of this office sanitary squads were first organized and used to perform all the sanitary work of the camp, such as the purification of water, the disposal of wastes, destruction of mosquitoes, etc. These squads were composed of hospital corps men and hired civilians working under the direction of the sanitary inspector; their work was r
satisfactory both to line and staff, and it is believed that this

zation marks the beginning of the use of the medical department for more extended executive sanitary functions.

The war with Spain and the wars in South Africa and Manchuria attracted general attention to the importance of diffusing a knowledge of sanitation, not only in the medical staff, but among officers of the line as well, and accordingly by General Orders No. 176, October 21, 1905, a department of military hygiene was established at the United States Military Academy, the senior medical officer at the academy being made the head of the department and a member of the academic board.

The method of examination of candidates for admission to the medical corps has been changed so as to require their graduation at the Army Medical School before being commissioned. In this way an eight months' period of probation is obtained which results in the discovery of moral or other defects not brought out by a single examination and the saving to the service of some excellent candidates who have an opportunity to make up small defects in education or preparation.

Appropriations have been obtained from Congress for the purchase of land and construction of a general hospital at Washington, D. C. This has long been needed and was recommended by Surgeon-General Hammond in 1862. An appropriation has also been obtained for the purchase of much needed book stacks at the library of the Surgeon-General, whereby this great national institution has been enabled to continue its invaluable services to the medical profession of the country.

It has been the policy of the office to encourage in every way important scientific work and original investigation and to assist other departments of the Government, although at some sacrifice on account of the shortage of medical officers. For example, Capt. B. K. Ashford was for two years loaned to the insular government of Porto Rico to carry out his beneficent and very successful campaign against tropical "anemia" due to hook-worm disease. Colonel Gorgas and five other medical officers have been detailed to carry out the sanitary regeneration of the Isthmus of Panama. The purchase of their sanitary supplies has been taken over and rescued from confusion and delay. In like manner the purchase of medical supplies for the Department of Commerce and Labor has been undertaken at their request. Maj. J. R. Kean has for nearly two years been on duty on the staff of the provisional governor of Cuba, exercising supervisory control over the sanitary department of that island, with four other medical officers detailed to assist him. Cordial relations have been established with the organized militia, and all requests for medical equipment and supplies from them and from the navy have been promptly complied with.

Toward the chief surgeons a policy of decentralization has been steadily pursued, and as regards the medical corps at large the necessity for good, earnest professional work has been emphasized, and a high standard maintained by stiffening the examinations for promotion, which it is the desire of this office to extend to the higher grades.

A new manual has been prepared in which the dominant idea has been not only to meet the needs of to-day, but also the exigencies of war and the requirements of field service, making all the details of *administration plain* to the untrained volunteer surgeon.

Successful efforts have been made to come into close touch with the medical services of the organized militia to encourage them to regard themselves as the reserve of the regular medical department, to look to it for supplies, advice, and assistance, and in every way to promote a feeling of solidarity. At the same time no opportunity has been neglected to cultivate the sympathetic interest of the medical profession of the country in the special work of the medical corps, as they must ever constitute the great reserve which must supply the medical establishment of the nation in arms.

In conclusion, attention is invited to the fact that there are at present three officers entitled Surgeon-General and stationed in Washington. Of these one belongs to the Army, one to the Navy, and one to the Treasury Department. This triplication of a title leads in time of peace to confusion and delay in that correspondence and telegrams are not infrequently misdirected or wrongfully delivered, and correspondents are at a loss to know the proper department to address.

In time of war serious, even grave, inconvenience is morally certain to arise from delay, from important or confidential business passing through those for whom it was not intended, and from other manifest complications, to the decided detriment of the public service.

As the title "Surgeon-General" pertained exclusively to this office for many years (from May, 1818, to March, 1871, when it was also given to the Navy), it is recommended that legislation be sought restricting that title to the head of the medical department of the Army, to whom it belongs by right of longest possession and because it is properly only a military title.

Very respectfully,

R. M. O'REILLY,
*Surgeon-General U. S. Army.*

The SECRETARY OF WAR.

# REPORT OF THE PAYMASTER-GENERAL.

# REPORT OF THE PAYMASTER-GENERAL.

WAR DEPARTMENT,
OFFICE OF THE PAYMASTER-GENERAL,
*Washington, September 15, 1908.*

SIR: I have the honor to submit the following report for the fiscal year ended June 30, 1908:

| | |
|---|---|
| On July 1, 1907, officers of the Pay Department were charged with public funds aggregating | $2,953,421.12 |
| During the fiscal year these officers received: | |
| From the United States Treasury | 36,943,213.15 |
| From soldiers' deposits | 1,676,708.68 |
| From army paymasters' collections | 806,965.26 |
| Total balances and receipts | 42,380,308.21 |
| Accounted for as follows: | |
| Expended on account of pay of the Army | 33,921,950.07 |
| Expended on account of mileage to officers and contract surgeons | 633,201.52 |
| Expended on account of Army War College | 20,955.19 |
| Expended on account of pay of Military Academy | 458,837.54 |
| Expended on account of encampment and maneuvers, organized militia | 196,912.75 |
| Total expenditures | 35,231,857.07 |
| Surplus funds deposited to credit of United States Treasurer | 1,008,894.48 |
| Soldiers' deposits deposited to credit of United States Treasurer | 1,676,708.68 |
| Army paymasters' collections deposited to credit of United States Treasurer | 806,965.26 |
| Balance charged to officers, June 30, 1908 | [a] 3,655,882.72 |
| Total accounted for | 42,380,308.21 |

The appropriations for the pay of the Army and the Military Academy, for expenses of the Army War College, and allotment of funds for the payment of the militia under section 15 of the act of January 21, 1903, amounted to $34,636,983.77 for the fiscal year. The gross accountability involved in the transactions of the disbursing officers and special disbursing agents amounted to $71,071,926.58, as shown by the table appearing in this report.

Detailed statements of the transactions of all officers in this department are appended hereto. The payments to the Army in the United States, the Philippine Islands, Hawaii, Cuba, Porto Rico, and Alaska have been made with promptness and no losses have occurred. The officers and clerks have promptly and faithfully performed all duties intrusted to them.

[a] The balance of $3,655,882.72 charged to officers on June 30, 1908, was needed for the muster of June 30, paid during the month of July. Up to this date the sum of $545,031.34 has been deposited to the credit of the United States Treasurer as unexpended balance of the various appropriations for 1908.

## ALLOTMENTS.

Under the present allotment law an enlisted man absent on distant duty is privileged to make an allotment of his pay "for the support of his family or relatives, for his own savings, or for other purposes." It has come to the attention of this office in several cases that banks designated by enlisted men as their allottees have failed, entailing a loss upon the men. Further, as stated in the annual report of my predecessor, it has been reported that many enlisted men have designated banks as their allottees with the sole purpose of enabling them to immediately check against the deposits, which operates to make an extra pay day each month for the men concerned. This practice is not beneficial to the best interests of the service, but so long as the broad provisions of the existing law obtain, the Paymaster-General is without authority to discontinue such allotments, the initiative toward such discontinuance resting solely with the allotter. Unquestionably it would operate to the benefit of the allotters if the existing law were amended so as to preclude an allotment of pay except for the support of families or relatives. A repeal of so much of the present allotment law as permits a soldier to allot a portion of his pay "for his own savings, or for other purposes," could not possibly operate detrimentally upon a soldier, as he has recourse to the army deposit system, which affords the best and safest means for saving his pay, carrying interest at the rate of 4 per cent per annum.

The average number of allotments in force each month during the fiscal year of 1908 was 2,870, which, at $12.50 each per month, made the average monthly disbursement $35,875. This average of $12.50 for the monthly payment on each allotment is based on the payments for June, 1908, when 2,313 allotments were in force and the amount paid thereon $28,886.

## CLERKS, PAYMASTER-GENERAL'S OFFICE.

To those unacquainted with the business of the administrative bureaus of the Government, the position of clerk in the Government service is generally looked upon as a much-desired berth, carrying good pay, short hours and little work. No more erroneous impression could possibly exist. The work of this office will compare favorably in amount and character with that of any business house or corporation in the country. In efficiently meeting its requirements the clerks have generally proven their intelligence and that they possess those qualities of application and industry which are recognized in business life as an indication of clerical ability of the highest order. The pay of four general classes of departmental clerks has remained unchanged since 1870, when the salary of clerks of class 4 was fixed at $1,800, class 3 at $1,600, class 2 at $1,400, and class 1 at $1,200, and at the present time clerks must enter this office at $900 and pass through an intermediate grade of $1,000 before entering upon the lowest of the general classes herein mentioned.

Promotions have been necessarily slow, dependent as they are upon the resignation or death of a clerk of a higher grade, and it is surely time, after the lapse of nearly forty years, that the clerks be given more adequate compensation for their long and faithful service.

Drawing the same salary from year to year, with no advance to meet the constant and ever increasing demand of greater living expenses, they have cheerfully performed their duties, and I earnestly hope they will receive their reward through a substantial increase of salary which will extend to all classes of Government clerks.

Estimates for salaries in the Executive Departments and establishments, prepared by the committee on grades and salaries under Executive order of June 11, 1907, have been published in House of Representatives' Document No. 648, Sixtieth Congress, first session. These estimates are based on reports furnished by the heads of the different Executive Departments and establishments and therefore represent a very close approximation of what is desired and merited in the way of reclassification of grades and salaries. It is recommended that these estimates be given favorable consideration by Congress during the coming session.

The matter of retirement of Government clerks with reasonable retired pay has been made the subject of several bills introduced in the Senate and House of Representatives. None of these bills contemplate that the Government shall bear the expense of the retired pay, but provide that the payments shall be made from a fund to be created by a monthly deduction from each clerk's salary. I am thoroughly in sympathy with the movement for retirement of clerks when they have reached an age which incapacitates them for the performance of their full duties, and earnestly hope for favorable legislation on the subject at an early date.

## CUBAN PACIFICATION.

Pursuant to instructions of the Secretary of War dated February 16, 1907, the Paymaster-General is required to render to the Chief of the Bureau of Insular Affairs, War Department, an itemized statement of the expenditures made monthly by Army paymasters additional to those which would have been necessary if the force comprising the Army of Cuban Paeification were employed in their ordinary places of duty. These reports have been rendered promptly. The movement to Cuba commenced in October, 1906, and the total increased expenditures to include the month of June, 1908, amount to $506,515.82.

## DEPOSITS.

The importance and benefit of the army deposit system to enlisted men is universally recognized. Through its agency they are enabled to make deposits from their pay with the Government and secure a good rate of interest thereon, 4 per cent per annum. The influence of the system has been to develop a spirit of thrift and saving which unquestionably elevates the standard of the enlisted personnel of the Army. Under existing laws deposits are repayable to soldiers only upon their discharge and are exempt from forfeiture except upon desertion. The fact that but a small fraction of deserters have deposits proves conclusively that the deposit system is also a strong incentive toward inducing honest and faithful service by those men who make deposits.

The subjoined table sets forth the deposits and repayments for the fiscal years since the system was established, and as a comparative compilation affords ample evidence that enlisted men recognize the advantages of making the Government the custodian of the savings from their pay.

*Number and amounts of deposits received from and repaid to soldiers on discharge from July 1, 1872, to June 30, 1908.*

| Fiscal year ending June 30— | Deposits received. | | Deposits repaid. | | |
|---|---|---|---|---|---|
| | Number. | Amount. | Number. | Principal. | Interest. |
| 1873 | ..... | $209,850.38 | ..... | ..... | ..... |
| 1874 | ..... | 346,609.56 | ..... | ..... | ..... |
| 1875 | ..... | 325,255.80 | ..... | ..... | ..... |
| 1876 | ..... | 435,912.68 | ..... | ..... | ..... |
| 1877 | 5,524 | 328,585.05 | 14,752 | $1,041,001.57 | $49,713.89 |
| 1878 | 5,524 | 346,243.94 | 3,182 | 145,667.91 | 88,420.24 |
| 1879 | 6,087 | 470,770.38 | 4,926 | 257,854.48 | 17,706.93 |
| 1880 | 8,635 | 477,174.44 | 8,084 | 392,568.93 | 30,680.97 |
| 1881 | 8,942 | 524,112.72 | 8,148 | 501,949.77 | 38,722.62 |
| 1882 | 6,890 | 448,561.83 | 7,570 | 428,482.44 | 31,658.73 |
| 1883 | 7,902 | 407,544.68 | 6,695 | 363,578.34 | 26,123.60 |
| 1884 | 7,114 | 389,267.55 | 8,184 | 404,291.57 | 31,124.93 |
| 1885 | 7,033 | 427,617.96 | 6,930 | 401,902.22 | 38,249.44 |
| 1886 | 7,261 | 469,031.55 | 7,835 | 490,506.79 | 46,583.23 |
| 1887 | 6,889 | 436,574.98 | 6,988 | 389,083.12 | 34,758.24 |
| 1888 | 7,409 | 386,944.10 | 6,346 | 323,952.97 | 29,327.01 |
| 1889 | 7,892 | 383,798.34 | 7,664 | 396,468.53 | 33,647.38 |
| 1890 | 7,634 | 395,128.82 | 7,206 | 411,039.74 | 41,596.60 |
| 1891 | 6,790 | 403,473.15 | 9,106 | 553,047.45 | 51,797.70 |
| 1892 | 5,570 | 334,464.70 | 8,019 | 410,873.15 | 38,894.26 |
| 1893 | 5,870 | 282,248.04 | 5,317 | 268,835.46 | 26,059.07 |
| 1894 | 5,914 | 361,830.76 | 5,786 | 290,088.98 | 27,014.32 |
| 1895 | 6,284 | 318,270.73 | 5,880 | 308,372.45 | 28,766.42 |
| 1896 | 8,778 | 420,338.87 | 6,486 | 359,200.43 | 38,614.66 |
| 1897 | 17,878 | 535,392.64 | 6,976 | 345,559.55 | 34,850.53 |
| 1898 | 21,856 | 613,513.51 | 17,377 | 561,518.64 | 45,815.61 |
| 1899 | 37,842 | 1,496,762.31 | 28,508 | 988,774.63 | 61,273.95 |
| 1900 | 91,461 | 3,215,544.66 | 27,571 | 1,028,146.34 | 43,234.89 |
| 1901 | 111,004 | 3,438,529.11 | 78,948 | 2,955,169.39 | 114,750.37 |
| 1902 | 80,833 | 2,660,250.66 | 129,271 | 3,708,820.19 | 190,957.77 |
| 1903 | 61,948 | 1,888,014.37 | 59,968 | 2,134,191.91 | 123,298.48 |
| 1904 | 59,970 | 1,585,687.60 | 62,198 | 1,838,105.64 | 107,032.95 |
| 1905 | 51,382 | 1,531,019.80 | 74,352 | 2,010,526.80 | 122,205.52 |
| 1906 | 54,206 | 1,495,228.04 | 35,899 | 1,168,236.62 | 70,112.93 |
| 1907 | 61,908 | 1,572,204.04 | 46,696 | 1,203,746.47 | 68,879.02 |
| 1908 | 50,896 | 1,676,708.68 | 69,120 | 1,902,552.80 | 124,029.82 |
| Total | ..... | 31,038,466.43 | ..... | 27,984,115.28 | 1,775,902.08 |
| Amount remaining to credit of depositors | ..... | 3,054,351.15 | ..... | ..... | ..... |

NOTE.—Repayment of deposits to soldiers from July 1, 1872, to June 30, 1876, were not recorded by fiscal years. The repayments of 1877 include all deposits repaid prior thereto.

The above table gives a complete history of soldiers' deposits since the passage of the act authorizing them, May 15, 1872.

## DETAIL SYSTEM.

Under section 26 of the act approved February 2, 1901, vacancies occurring in certain specified staff departments are filled by four-year details of line officers of corresponding rank, and by the operation of this act all of the captains and three majors of the Pay Department of the Army are now detailed officers.

Three former Paymasters-General have recommended that the application of the detail system in the Pay Department be restricted to captains, and that the grades of major, lieutenant-colonel, and colonel be made permanent. I fully concur in their recommendations. In order to have the Pay Department ready at all times to meet every condition it is most important to have permanent officers

in the higher grades. When a detailed officer has fully mastered the laws, regulations, and methods of the Pay Department and attained the highest point of usefulness, the four years expire and he must return to the line. The permanent officer who devotes his life to special work is always more valuable than the one who only serves a detail for a limited period. Major-General Barry, in his annual report for 1907, makes the following remarks on the detail system:

It is difficult to understand how any colonel, major, or captain, whose regiment, battalion, or company, as the case may be, is ordered to the front in war time will be content with a detail in a Staff Department. Every efficient, enterprising, and energetic officer will use his utmost endeavors to get to the front, and if he is retained in a staff position when the regiment, battalion, or company which was his goes to the front under war emergencies his heart and soul will not and can not be in his staff duties, and resultant inefficiency will occur.

It is recommended that all grades in the Pay Department above that of captain be made permanent and that promotion to major be made from the captains who have served, or who may be serving, a detail in the Pay Department and who have shown the greatest proficiency in their work. To obtain the best results and to meet the increasing demands on the Pay Department, all of the field officers, in my judgment, should be permanent. It is only in this way that the department can reach the highest state of efficiency. I recommend therefore the following provision submitted by my predecessor in his annual report for 1907:

*Provided*, That all vacancies in the grade of major shall be filled by the permanent appointment of captains who have served or may be serving a detail in the Pay Department and whose fitness for appointment shall be established by their records for efficiency in the disbursement of and accountability for public funds, or from paymasters' clerks with not less than twenty years' service; that said permanent appointees shall be promoted to lieutenant-colonel and colonel according to seniority; and that section twenty-six of the act of February second, nineteen hundred and one (31 Stat. L., 755), is hereby amended accordingly.

## INCREASED PAY FOR THE ARMY.

By the act approved May 11, 1908, Congress granted a substantial increase of pay for commissioned officers and enlisted men of the Army. The prorated increase for commissioned officers, taking into consideration all grades, amounts to approximately 20 per cent. For the enlisted men the increase is approximately 40 per cent. By this act Congress has indicated that it recognizes the fact that the cost of living has been constantly increased for a number of years, and it is hoped that such recognition will bring forth at the coming session legislation which will increase the salaries of all clerks connected with the military establishment.

## LOST CHECKS.

Every year many original checks issued by disbursing officers are lost, stolen, or destroyed. Under section 3646 of the Revised Statutes, as amended by the act of June 19, 1906, the payees of said checks, where the amount involved is in excess of $50, are debarred from securing the issuance of a duplicate check until after the expiration of six months from the date on which the original check was

drawn. The time restriction placed upon the issuance of duplicate checks has always been a source of inconvenience to officers and enlisted men who have been so unfortunate as to have suffered the loss, through theft, destruction, or other uncontrollable circumstances, of checks issued in payment of their salary, etc. Where the checks have been indorsed to members of their families or to other persons, the inconvenience has necessarily fallen upon them. In the past year the loss of checks has caused, in some cases, real distress, which could not be readily relieved, owing to the time limitation imposed by the law, and I earnestly recommend that section 3646 of the Revised Statutes, as amended, be further amended so as to permit of the issuance of a duplicate check within thirty days from the date of the original check in all cases where the amount involved is less than $1,000. Such an amendment will involve no risk on the part of the Government, as the law now requires the filing of a sufficient bond of indemnity before a duplicate check can be issued.

## MILITIA.

Under section 15 of the act of January 21, 1903, and the amendment thereof by the act of May 27, 1908, militia organizations of the several States and Territories and the District of Columbia participating in operations at maneuver camps or in joint exercises at lake or seacoast defenses are paid by the Pay Department from funds specifically appropriated by Congress for such purpose.

Between July 1, 1907, and June 30, 1908, militia organizations participated in joint seacoast defense exercises at various posts in the Departments of the East, Gulf, Columbia, and California, and also in the joint field maneuvers at Pine Camp, N. Y. There has been disbursed for the pay of these militia troops a total of $196,912.75 pertaining to the appropriation "Encampment and maneuvers, organized militia, 1908."

Army paymasters have been continuously on duty at the places of joint exercises and encampments for the purpose of making payment to the militia organizations and giving instructions relative to the preparation and extension of pay rolls.

## PAYMASTERS' CLERKS.

In the force known as "Paymasters' clerks of the Army" the Government should possess an efficient corps of trained accountants, skilled in the disbursement of public funds, and with a thorough knowledge of the laws, decisions, and regulations pertaining to pay of the Army in all of its branches.

Paymasters' clerks are appointed by the Secretary of War upon recommendation of the Paymaster-General, but their exact status, whether of the civil or military establishment of the Government, has never been established. In my judgment it is important that Congress specifically determine their status. Sharing with paymasters the duties of paying the Army and accounting for the funds expended, there can be no doubt but that they should be accredited to the military establishment. A bill to make them warrant officers was introduced in the last session of Congress and received the indorsement of

Hon. William H. Taft, then Secretary of War. The passage of such a bill would give these clerks the desired status.

Skilled as accountants, it is an easy matter for paymasters' clerks to secure lucrative positions, and there is nothing to prevent them from terminating their employment at such time as they may desire. During the past seven years twenty-two have resigned to accept better positions in civil life, causing embarrassment to the service and necessitating the appointment of new men who require months of training before being able to intelligently fulfill the duties of their positions. This detrimental feature makes it imperative, for the good of the service, that paymasters' clerks be amenable to the rules and articles of war, and such end can only be attained by giving them a military standing. Further, the present system of filling vacancies in the Pay Department by the four year detail of line officers necessitates the assignment of a trained clerk to an officer so detailed. Not being as a rule familiar with the methods of disbursing and accounting for public funds, and the laws, decisions, and regulations governing the pay of the Army, the detailed paymaster must be furnished with an experienced clerk in order to attain success in his new field of duty.

By its incorporation in the military establishment the force now known as paymasters' clerks would be given a status appropriate to the duties required of it and would thereby constitute a permanent trained corps ready at all times to meet any exigency of the service.

## PERSONNEL.

The following changes in Pay Department personnel occurred between July 1, 1907, and June 30, 1908:

### APPOINTMENTS.

Col. Charles H. Whipple, assistant paymaster-general, appointed brigadier-general and paymaster-general January 1, 1908.

### PROMOTIONS.

Capt. Pierre C. Stevens, paymaster, promoted major and paymaster July 23, 1907.

Maj. Webster Vinson, paymaster, promoted lieutenant-colonel and deputy paymaster-general September 4, 1907.

Capt. Bradner D. Slaughter, paymaster, promoted major and paymaster September 4, 1907.

Lieut. Col. John C. Muhlenberg, deputy paymaster-general, promoted colonel and assistant paymaster-general January 1, 1908.

Maj. Hamilton S. Wallace, paymaster, promoted lieutenant-colonel and deputy paymaster-general January 1, 1908.

Lieut. Col. George R. Smith, deputy paymaster-general, promoted colonel and assistant paymaster-general April 7, 1908.

Maj. Francis L. Payson, paymaster, promoted lieutenant-colonel and deputy paymaster-general April 7, 1908.

### RETIREMENTS.

Lieut. Col. Elijah W. Halford, deputy paymaster-general, September 4, 1907, by operation of law.

Brig. Gen. Culver C. Sniffen, paymaster-general, January 1, 1908, by operation of law.

Col. John C. Muhlenberg, assistant paymaster-general, April 7, 1908, for disability incident to the service.

DEATHS.

Maj. Eugene Coffin, paymaster, July 23, 1907.
Maj. Manly B. Curry, paymaster, December 18, 1907.

DETAILS FROM THE LINE.

Capt. William H. Burt, field artillery, July 26, 1907.
Capt. John K. Miller, infantry, August 27, 1907.
Capt. Edwin M. Suplee, cavalry, September 7, 1907.
Capt. William F. Clark, cavalry, September 19, 1907.
Capt. Erneste V. Smith, infantry, October 28, 1907.
Capt. Harold Hammond, infantry, November 21, 1907.
Capt. Ernest A. Greenough, coast artillery, November 28, 1907.
Capt. Kenzie W. Walker, cavalry, December 21, 1907.
Maj. Delamere Skerrett, coast artillery, December 27, 1907.
Maj. John P. Hains, coast artillery, January 21, 1908.
Capt. Charles E. Morton, infantry, January 27, 1908.
Capt. Robert E. Frith, infantry, April 7, 1908.
Capt. Chas. E. N. Howard, coast artillery, April 7, 1908.
Maj. William F. Blauvelt, infantry, April 24, 1908.
Capt. Edward D. Anderson, cavalry, May 31, 1908.

DETAILED PAYMASTERS RELIEVED.

Capt. William F. Creary, infantry, August 27, 1907, on completion of four years' detail.

Capt. Charles W. Fenton, cavalry, September 19, 1907, on completion of four years' detail.

Capt. Frederick Day, infantry, October 25, 1907, on promotion to majority.

Capt. John M. Sigworth, infantry, November 21, 1907, on completion of four years' detail.

Capt. Marcellus G. Spinks, coast artillery, November 28, 1907, on completion of four years' detail.

Capt. George W. Moses, cavalry, December 21, 1907, on completion of four years' detail.

Capt. Abraham P. Buffington, infantry, January 27, 1908, on promotion to majority.

Capt. Thomas H. R. McIntyre, coast artillery, April 7, 1908, on completion of four years' detail.

Capt. Preston Brown, infantry, April 7, 1908, on completion of four years' detail.

Capt. Samuel F. Dallam, cavalry, May 31, 1908, relieved on personal request.

Respectfully submitted.

CHAS. H. WHIPPLE,
*Paymaster-General, U. S. Army.*

The SECRETARY OF WAR.

*Mileage disbursements for the fiscal year ended June 30, 1908:*

| | Appropriations. | | |
|---|---|---|---|
| | 1906. | 1907. | 1908. |
| Inspection of the Army: | | | |
| By the generals commanding departments, accompanied by officers of their staffs, as provided by paragraph 191, Army Regulations | ..... | $670.96 | $4,773.70 |
| By officers of the Genreal Staff Corps | ..... | 729.33 | 276.97 |
| By officers of the Adjutant-General's Department | ..... | 14.00 | 164.83 |
| By officers of the Inspector-General's Department | ..... | 1,384.58 | 7,759.78 |
| By officers of the Quartermaster's Department | ..... | 422.83 | 9,561.46 |
| By officers of the Subsistence Department | ..... | 356.27 | 6,939.34 |
| By officers of the Medical Department | $62.88 | 821.05 | 2,426.89 |
| By officers of the Crops of Engineers | ..... | 64.74 | 859.33 |
| By officers of the Ordnance Department | ..... | 919.74 | 8,330.09 |
| By officers of the Signal Corps | ..... | 632.76 | 2,589.19 |
| Inspection of— | | | |
| Artillery districts | ..... | 66.80 | 1,298.19 |
| Colleges | ..... | ..... | 1,646.06 |
| Engineer and other property | ..... | 1.40 | ..... |
| Horses | ..... | 982.23 | 6,882.57 |
| Militia | ..... | 702.84 | 13,371.11 |
| Submarine mines | ..... | 18.01 | 2,776.01 |
| Troops | ..... | 106.46 | 365.07 |
| Work on fortifications by engineer officers | ..... | 65.46 | 2,466.86 |
| Special inspections | ..... | 125.71 | 457.18 |
| Total for inspection of the Army | 62.88 | 8,085.17 | 72,944.63 |
| General recruiting duty | ..... | 5,675.86 | 95,349.83 |
| Joining for and returning from recruiting duty | ..... | 233.66 | 11,956.34 |
| Returning from conducting recruits | ..... | 626.13 | 15,443.05 |
| Total for recruiting | ..... | 6,535.65 | 122,749.22 |
| General Staff, joining and returning from detail | ..... | ..... | 1,421.26 |
| Change of station | 43.60 | 25,173.26 | 178,698.15 |
| General Service and Staff College, Fort Leavenworth, Kans | ..... | 132.56 | 5,880.34 |
| Travel of general officers and their aids other than for inspection | ..... | 225.86 | 1,795.77 |
| Travel in Europe and other foreign countries | ..... | 856.12 | 3,002.92 |
| Courts-martial and courts of inquiry | ..... | 253.38 | 14,846.20 |
| Payment of troops | ..... | 302.64 | 15,883.00 |
| Officers ordered to express offices to obtain money for payment of troops | ..... | ..... | 200.65 |
| Treasurer and professors Military Academy (Military Academy duty) | ..... | 799.14 | 184.52 |
| Instructions of Secretary of War (confidential duty) | ..... | 2,195.42 | 5,405.97 |
| Target practice, target ranges, and rifle teams | 5.52 | 1,088.98 | 44,356.61 |
| Conducting prisoners, sick, and insane | ..... | 241.78 | 4,833.02 |
| Line officers on business for Quartermaster's and Subsistence departments | ..... | 273.42 | 2,518.22 |
| Retiring boards and officers retired and ordered home | ..... | 1,260.39 | 10,819.75 |
| Board of Ordnance and Fortification | ..... | ..... | 1,175.56 |
| Boards to examine officers for promotion | ..... | 1,855.36 | 16,782.31 |
| Boards for examination of gunners | ..... | 381.75 | 288.12 |
| Boards of survey | ..... | 71.22 | 351.94 |
| Boards on General Staff | ..... | ..... | 333.24 |
| Board on land defenses, Manila Bay | ..... | ..... | 53.13 |
| Board for considering questions pertaining to the protection of seacoast forts from attack by land | ..... | 164.22 | 871.09 |
| Board on site for wireless station | ..... | ..... | 33.80 |
| Board on military site, Naval, P. I | ..... | ..... | 93.16 |
| Board on range finders | ..... | ..... | 254.53 |
| Board on wire-wound guns | ..... | ..... | 347.68 |
| Board on military reservation, Hawaiian Islands | ..... | ..... | 10.33 |
| Board to investigate fire on steamer Gibbon | ..... | ..... | 5.04 |
| Leases and other legal business | ..... | 2.38 | 1,532.57 |
| Topographical work | ..... | 140.84 | 3,006.89 |
| Consultation with division and department commanders | ..... | 38.70 | 693.88 |
| Special investigations | 62.02 | 29.56 | 1,032.90 |
| Fire control and installation | ..... | ..... | 431.00 |
| Pursuit of deserters and escaped prisoners | ..... | ..... | 29.26 |
| War College, attending, and delivering lectures | ..... | ..... | 1,188.02 |
| Naval War College, delivering lectures | ..... | ..... | 211.48 |
| Army of Cuban Pacification | ..... | 1,873.06 | 14,939.26 |
| Joint army and militia coast defense exercises | ..... | 209.53 | 16,281.60 |
| Duty at the Jamestown Ter-Centennial Exposition | ..... | 48.80 | 2,230.54 |
| Artillery instruction at Indian Head and Navy-Yard Gun Factory | ..... | ..... | 656.88 |
| Conferring with Artillery Board, Fort Monroe, Va | ..... | ..... | 105.28 |
| Witnessing maneuvers— | | | |
| German army | ..... | ..... | 1,224.83 |
| Grecian army | ..... | ..... | 517.87 |
| Japanese army | ..... | ..... | 545.10 |
| Staff ride of student officers at the General Service and Staff College, Fort Leavenworth, Kans | ..... | ..... | 2,880.— |
| Department's field day | ..... | ..... | 62 |

*Mileage disbursements for the fiscal year ended June 30, 1908*—Continued.

| | Appropriations. | | |
|---|---|---|---|
| | 1906. | 1907. | 1908. |
| Field operations, Philippine Islands | | | $93.92 |
| Travel for medical or dental treatment | | | 6,812.73 |
| Witnessing manufacture of smokeless powder | | | 61.36 |
| Attending National Dental Association | | | 177.92 |
| Attending convention American Society Civil Engineers | | | 252.42 |
| Attending Cavalry School, Saumur, France | | | 344.57 |
| Attending National Prison Association | | | 110.60 |
| Attending National Rifle Association | | | 63.84 |
| Attending American Veterinary Medical Association | | | 66.50 |
| Attending dedication memorial stone, Lundys Lane | | | 61.32 |
| Attending American Health Association | | | 27.16 |
| Attending dedication McKinley monument | | | 483.48 |
| Attending International Congress on Hygiene and Demography, Berlin, Germany | | | 252.43 |
| Attending Military Surgeon's Association | | | 29.40 |
| Attending Kansas Library Association | | | 24.16 |
| Attending National Guard Association | | | 479.92 |
| Attending funerals | | $52.56 | 53.98 |
| Attending Niagara Falls Commission | | | 104.72 |
| Attending Third International Sanitary Conference | | | 366.66 |
| Attending Intercollegiate Athletic Association | | | 190.56 |
| Attending National Convention of Representatives of Organized Militia | | | 64.82 |
| Attending graduation exercises, West Point | | | 78.96 |
| Attending meeting executive committee of the American Society for Testing Materials | | | 46.48 |
| Attending unveiling of statue of General Wayne at Valley Forge | | | 16.32 |
| Attending American Medical Association | | | 114.24 |
| Army maneuvers | | 39.13 | 2,462.03 |
| Accompanying Secretary of War on tour of inspection in the Philippines | | | 190.91 |
| Accompanying Secretary of War to the Philippines and return | | | 755.01 |
| Witnessing balloon experiments | | | 236.95 |
| Test of horsemanship | | | 10,490.22 |
| Military aeronautics | | | 161.14 |
| International balloon race | | | 82.92 |
| Conference with Chief of Staff | | | 228.68 |
| Military tournament, St. Joseph, Mo | | | 628.95 |
| Military intelligence work | | 3.36 | 358.43 |
| Conducting religious services | | | 20.75 |
| Installation of searchlights | | | 54.32 |
| Pertaining to coast artillery drill regulations | | | 26.32 |
| Delivering lecture on work of Signal Corps to cadets at West Point | | | 39.48 |
| Conferring with field agent, Red Cross Society | | | 148.12 |
| Duty with field regiment artillery, German army | | | 103.39 |
| Militia officers attending garrison and service schools | | 58.45 | |
| Duty not stated | | | 86.04 |
| Relief of sufferers from cyclone which occurred in the Southern States April 24, 1908 | | | [a] 868.20 |
| Amounts | $174.02 | 52,392.69 | 581,163.44 |
| | | | 52,392.69 |
| | | | 174.02 |
| Total Pay Department disbursements during fiscal year 1908 | | | 633,730.15 |
| Paid by Auditor for the War Department, on Treasury settlements and chargeable to mileage appropriations | 44.86 | 262.30 | 141.38 |
| | | | 262.30 |
| | | | 44.86 |
| Aggregate, Pay Department and Auditor for War Department | | | 634,178.69 |

[a] Mileage appropriation should not be debited with this expenditure.

*Comparative statement of the principal items showing increase in mileage for 1908 over that for 1907.*

| | 1908. | 1907. | Increase. |
|---|---|---|---|
| Change of station | $178,698.15 | $142,748.23 | $35,949.92 |
| Recruiting duty | 122,749.22 | 87,063.91 | 35,685.31 |
| Joint army and militia coast defense exercises | 16,281.60 | 476.27 | 15,805.33 |
| Test of horsemanship | 10,490.22 | | 10,490.22 |
| Target practice, target ranges, and rifle teams | 44,356.61 | 36,247.38 | 8,109.23 |
| Inspection of militia | 13,371.11 | 9,577.29 | 3,793.82 |
| *Total* | | | 109,833.83 |

*Statement of the account of the Pay Department, United States Army, with the appropriations subject to its control during the fiscal year ending June 30, 1908.*

| Appropriations. | In account with the Treasury. | | | | | | |
|---|---|---|---|---|---|---|---|
| | Balance in the Treasury July 1, 1907. | Amount of appropriations and transfer warrants. | Unexpended balances deposited. | Paymasters' collections deposited. | Soldiers' deposits deposited. | Repayments in settlement of accounts. | Total. |
| Pay, etc., of the Army, 1908 | | $34,458,048.60 | $20,810.85 | $454,526.93 | | $230.94 | $34,933,617.32 |
| Mileage to officers and contract surgeons, 1908 | | 600,499.26 | | 1,204.55 | | | 601,703.81 |
| Pay of Military Academy, 1908 | | 576,306.54 | | 163.87 | | | 576,470.41 |
| Army War College, 1908 | | 15,002.25 | | | | | 15,002.25 |
| Encampment and maneuvers, organized militia, 1908 | | 224,000.00 | 5,183.85 | 20.50 | | | 229,204.35 |
| Pay of the army deposit fund | $4,045,191.33 | 1,674,078.20 | | | | | 5,719,269.53 |
| Pay, etc., of the Army, 1907 | 26,684.80 | 681,122.57 | 776,742.54 | 261,428.61 | | 355.22 | 1,746,333.74 |
| Mileage to officers and contract surgeons, 1907 | 11,096.93 | 367.71 | .40 | 1,342.65 | | | 12,807.69 |
| Pay of Military Academy, 1907 | 30,729.25 | | 4,009.12 | 41.67 | | | 34,780.04 |
| Army War College, 1907 | 4,598.26 | | 128.00 | | | | 4,726.26 |
| Encampment and maneuvers, organized militia, 1907 | 6,434.40 | | 12,199.21 | | | | 18,633.61 |
| Pay, etc., of the Army, 1906 | 274,916.32 | 733.98 | 68,154.46 | 1,903.05 | | 50.02 | 345,757.83 |
| Army War College, 1906 | 104.65 | | 24.36 | | | | 129.01 |
| Mileage to officers and contract surgeons, 1906 | 35,896.90 | 372.06 | 2,066.52 | 62.79 | | | 38,398.27 |
| Pay of Military Academy, 1906 | 33,341.66 | | 312.39 | | | | 33,654.05 |
| Pay, etc., of the Army, 1905 and prior years | | 665.90 | 19,740.89 | 2,394.94 | | 4,416.90 | 27,218.53 |
| Mileage to officers and contract surgeons, 1905 and prior years | | 35.51 | 362.14 | 36.42 | | | 434.07 |
| Pay, etc., of the Army— | | | | | | | |
| 1905 | | 56.09 | | | | | 56.09 |
| 1904 | | 116.18 | | | | | 116.18 |
| 1903 | | 55.20 | | | | | 55.20 |
| Encampment and maneuvers, organized militia | | 250,000.00 | | | | | 250,000.00 |
| Pay, etc., of the Army, 1908-9 | | 3,000.00 | | | | | 3,000.00 |
| Total | 4,468,994.50 | 38,484,459.95 | 909,734.73 | 723,125.98 | | 5,053.08 | 44,591,368.24 |

*Statement of the account of the Pay Department, United States Army, with the appropriations subject to its control during the fiscal year ending June 30, 1908*—Continued.

| Appropriations. | In account with the Treasury—Continued. | | | | | Balance in the hands of paymasters June 30, 1908. | Total balances June 30, 1908. |
|---|---|---|---|---|---|---|---|
| | Amount drawn by requisition and warrant. | | Amount covered into surplus fund. | Total. | Balance in the Treasury, June 30, 1908. | | |
| | On Pay Department request. | On Treasury settlements. | | | | | |
| Pay, etc., of the Army, 1908 | $34,682,500.00 | $150,257.80 | | $34,832,757.80 | $100,859.52 | $2,966,100.73 | $3,066,960.25 |
| Mileage to officers and contract surgeons, 1908 | 599,833.33 | 402.25 | | 600,235.58 | 1,468.23 | 18,672.29 | 20,140.52 |
| Pay of Military Academy, 1908 | 471,000.00 | 1.75 | | 471,001.75 | 105,468.66 | 39,581.47 | 145,050.13 |
| Army War College, 1908 | 14,000.00 | 144.17 | | 14,144.17 | 858.08 | 1,757.93 | 2,616.01 |
| Encampment and maneuvers, organized militia, 1908 | 229,169.35 | 35.00 | | 229,204.35 | | 27,072.75 | 27,072.75 |
| Pay of the army deposit fund | 784,000.00 | 2,198,901.91 | | 2,982,901.91 | 2,736,367.62 | 470,015.29 | 3,206,382.91 |
| Pay, etc., of the Army, 1907 | 55,000.00 | 826,027.36 | | 881,027.36 | 866,306.38 | 39,908.59 | 905,214.97 |
| Mileage to officers and contract surgeons, 1907 | 11,000.00 | 1,255.75 | | 12,255.75 | 551.94 | 802.17 | 1,354.11 |
| Pay of Military Academy, 1907 | | | | | 34,780.04 | | 34,780.04 |
| Army War College, 1907 | 4,581.40 | 1.97 | | 4,583.37 | 142.89 | | 142.89 |
| Encampment and maneuvers, organized militia, 1907 | | 84.27 | | 84.27 | 18,549.34 | | 18,549.34 |
| Pay, etc., of the Army, 1906 | | 345,753.31 | $4.52 | 345,[illegible].83 | | .76 | .76 |
| Army War College, 1906 | | | 129.01 | 129.01 | | | |
| Mileage to officers and contract surgeons, 1906 | | 112.33 | 38,285.94 | 38,398.27 | | | |
| Pay of Military Academy, 1906 | | | 33,654.05 | 33,654.05 | | | |
| Pay, etc., of the Army, 1905 and prior years | | 332.14 | 26,886.39 | 27,218.53 | | | |
| Mileage to officers and contract surgeons, 1905 and prior years | | 1.00 | 433.07 | 434.07 | | | |
| Pay, etc., of the Army— | | | | | | | |
| 1905 | | | 56.09 | 56.09 | | | |
| 1904 | | | 116.18 | 116.18 | | | |
| 1903 | | 55.20 | | 55.20 | | | |
| Encampment and maneuvers, organized militia | 90,629.07 | | | 90,629.07 | 159,370.93 | 90,629.07 | 250,000.00 |
| Pay, etc., of the Army, 1908-9 | 1,500.00 | | | 1,500.00 | 1,500.00 | 1,341.67 | 2,841.67 |
| Total | 36,943,213.15 | 3,523,366.21 | 99,565.25 | 40,566,144.61 | 4,025,223.63 | 3,655,882.72 | 7,681,106.35 |

NOTE.—Appropriations under certified claims aggregating a total balance of $81,677.90 were dropped from the books of this office for the reason that said appropriations are no longer under control of the Pay Department. Claims involving above-mentioned appropriations are only paid by warrants issued by the Treasury Department.

*Statement showing the balance in the hands of each disbursing officer of the Pay Department, States Treasury, or turned over by other agents during the fiscal year ending June 30, or replacement in the Treasury, and the balance remaining in the hands of paymasters*

| Rank and name. | Balance in hands of each paymaster on June 30, 1907. | Remitted from the Treasury in the year ending June 30, 1908. | Received from other paymasters. | Received from paymaster's collections. | Received from soldiers' deposits. | Total received and to be accounted for. |
|---|---|---|---|---|---|---|
| *Paymaster-general.* | | | | | | |
| Whipple, C. H.[a] | $270,121.35 | $3,155,014.73 | $100,348.01 | $943.46 | $1,442.58 | $3,527,870.13 |
| *Colonels and assistant paymasters-general.* | | | | | | |
| Comegys, W. H | 177,883.64 | 5,440,338.81 | 105,972.72 | 1,983.57 | 1,300.00 | 5,727,478.74 |
| Tucker, W. F | 89,221.32 | 1,775,000.00 | 155,992.41 | 12,546.66 | 27,289.80 | 2,060,050.19 |
| Muhlenberg, J. C | | 1,590,000.00 | 153,474.56 | 3,665.60 | 1,338.26 | 1,748,478.42 |
| Smith, G. R | | 1,934,000.00 | 650,956.56 | 9,472.26 | 19,245.60 | 2,613,674.42 |
| *Lieutenant-colonels and deputy paymasters-general.* | | | | | | |
| Rogers, H. L | | 3,338,900.00 | 362,349.90 | 1,239.96 | 96.50 | 3,702,586.36 |
| Vinson, W | 94,821.32 | 1,121,500.00 | 387,211.29 | 21,232.22 | 38,589.30 | 1,663,354.13 |
| Wallace, H. S | | 4,150,000.00 | 1,238,592.72 | 2,654.65 | 26,566.74 | 5,417,814.11 |
| Payson, F. L | 245,110.31 | 2,370,553.85 | 513,604.08 | 12,255.58 | 17,969.76 | 3,159,493.58 |
| *Majors and paymasters.* | | | | | | |
| Downey, G. F | 78,381.17 | 558,000.00 | 251,985.93 | 3,132.32 | 12,874.00 | 904,373.42 |
| Goodman, T. C | 71,839.96 | 543,000.00 | 528,261.99 | 20,510.83 | 28,710.16 | 1,192,322.94 |
| Houston, J. B | 23,869.40 | 1,096,000.00 | 230,191.76 | 8,288.81 | 11,810.44 | 1,370,160.41 |
| Ray, B. B | | | 589,000.00 | 4,840.71 | 19,682.53 | 613,523.24 |
| Lord, H. M | 67,004.60 | 1,138,000.00 | 391,809.50 | 13,075.10 | 18,402.92 | 1,628,292.12 |
| Rochester, W. B., jr | | | 796,343.58 | 15,348.51 | 12,919.56 | 824,611.65 |
| Smith, R. S | | 1,039,405.76 | 270,506.11 | 14,233.05 | 29,276.19 | 1,353,421.11 |
| Holloway, G. T | 117,790.06 | 596,000.00 | 496,216.39 | 12,553.97 | 15,926.89 | 1,238,487.31 |
| Gambrill, W. G | 60,795.41 | 280,000.00 | 789,465.24 | 25,812.69 | 34,672.91 | 1,190,746.25 |
| Keleher, T. D | 625.49 | | 603,692.66 | 14,710.94 | 30,882.09 | 649,911.18 |
| Pickett, G. E | 83,907.68 | 780,000.00 | 1,019,697.22 | 24,035.35 | 28,445.60 | 1,936,085.85 |
| Dawes, J. W | 75,659.32 | 527,500.00 | 538,760.11 | 20,631.95 | 29,683.13 | 1,192,234.51 |
| Canby, J | 84,215.11 | 132,000.00 | 533,088.87 | 7,936.18 | 39,427.82 | 796,667.98 |
| Curry, M. B | 63,269.05 | 30,000.00 | 211,594.06 | 10,010.68 | 16,230.48 | 331,104.27 |
| Coffin, E | 69,325.14 | | 13,019.58 | 11.86 | 627.75 | 82,984.33 |
| Lynch, J. R | 84,211.21 | | 735,643.22 | 15,855.29 | 72,848.92 | 908,558.64 |
| Stanton, C. E | 76,707.86 | | 574,535.71 | 21,115.55 | 29,489.25 | 701,848.37 |
| Skerrett, D | | | 316,750.03 | 6,925.63 | 9,273.25 | 332,948.91 |
| Stevens, P. C | 18,755.07 | 486,000.00 | 215,891.55 | 13,260.39 | 18,628.74 | 752,535.75 |
| Slaughter, B. D | | 200,000.00 | 709,831.15 | 18,871.57 | 11,393.30 | 940,096.02 |
| Hains, J. P | | 75,000.00 | 81,843.18 | 2,257.54 | 4,602.23 | 163,702.95 |
| Blauvelt, W. F | | 65,000.00 | 260,593.42 | 4,360.29 | 4,369.39 | 334,323.10 |
| *Captains and paymasters.* | | | | | | |
| Smith, E. V | | | 525,056.54 | 11,797.11 | 30,567.05 | 567,420.70 |
| Day, F. R | | | 183,857.07 | 5,103.23 | 6,986.00 | 195,946.30 |
| Dwyer, C. G | 42,017.01 | | 759,695.05 | 23,838.47 | 44,771.64 | 870,322.17 |
| Carnahan, E. C | 47,041.95 | | 854,605.00 | 12,016.55 | 38,467.81 | 952,131.31 |
| Moody, T. M | 46,236.94 | | 1,037,000.00 | 19,710.64 | 64,779.49 | 1,167,727.07 |
| Sigworth, J. M | 54,923.97 | 240,000.00 | 46,021.67 | 12,246.54 | 10,139.73 | 363,331.91 |
| Fenton, C. W | 62,097.21 | 215,000.00 | 65,592.04 | 7,826.82 | 14,287.12 | 364,803.19 |
| Lyon, H. G | 50,662.05 | 443,500.00 | 105,198.14 | 10,193.78 | 17,695.50 | 627,249.47 |
| Suplee, E. M | | | 360,689.44 | 6,377.34 | 41,790.00 | 408,856.78 |
| Clark, W. F | | 70,000.00 | 411,290.20 | 14,553.24 | 13,173.51 | 509,016.95 |
| Miller, J. K | | 105,000.00 | 466,727.82 | 6,630.73 | 13,862.73 | 592,221.28 |
| Carey, E. C | 108,316.66 | 433,000.00 | 410,647.20 | 21,128.26 | 29,360.00 | 1,002,452.12 |
| Ely, F. D | 53,777.95 | 284,000.00 | 669,972.69 | 24,822.30 | 24,387.54 | 1,056,960.48 |
| Walker, K. W | | | 362,513.17 | 14,921.33 | 31,373.64 | 408,808.14 |
| Sweezey, C. B | 13,113.28 | | 986,217.55 | 14,385.75 | 36,309.45 | 1,050,026.03 |
| Johnston, F. E | 78,830.27 | | 1,089,189.73 | 16,339.26 | 86,409.68 | 1,270,768.94 |
| McIntyre, T. H. R | 24,510.84 | 120,000.00 | 539,900.94 | 15,107.35 | 24,571.36 | 724,090.49 |
| Hammond, H | | | 291,793.19 | 10,340.19 | 15,576.71 | 317,710.09 |
| Spinks, M. G | 20,951.91 | 327,000.00 | 189,454.93 | 11,228.86 | 39,044.56 | 587,680.26 |
| Dixon, H. B | 82,007.41 | 356,500.00 | 341,076.91 | 13,433.90 | 28,933.63 | 821,951.85 |
| Moses, G. W | 4,000.00 | | 135,169.99 | 4,752.65 | 4,981.13 | 148,903.77 |
| Brown, P | 7,880.91 | | 454,629.08 | 21,039.09 | 60,693.05 | 544,242.13 |

[a] Disbursements from July 1, 1907, to December 31, 1907, as colonel and assistant paymaster-general.

*United States Army, on the 1st of July, 1907; the amount remitted to each from the United 1908; the amounts accounted for by accounts and vouchers of expenditures, or by transfer to be accounted for in the next fiscal year.*

| Surplus funds deposited in the Treasury. | Paymaster's collections deposited in the Treasury. | Soldiers' deposits deposited. | Expenditures. | Transferred to other paymasters. | Balance in hands of each paymaster on June 30, 1908. | Total accounted for. |
|---|---|---|---|---|---|---|
| $131,024.36 | $943.46 | $1,442.58 | $1,036,725.35 | $2,357,734.38 | ..... | $3,527,870.13 |
| 110,351.67 | 1,983.57 | 1,300.00 | 2,267,525.15 | 3,241,940.38 | $104,377.97 | 5,727,478.74 |
| 50,845.96 | 12,546.66 | 27,289.80 | 1,025,709.70 | 943,658.07 | ..... | 2,060,050.19 |
| 128.00 | 3,665.60 | 1,338.26 | 585,864.95 | 1,157,481.61 | ..... | 1,748,478.42 |
| 703.26 | 9,472.26 | 19,245.60 | 806,949.23 | 1,615,048.35 | 162,255.72 | 2,613,674.42 |
| 12,847.74 | 1,239.96 | 96.50 | 1,319,836.42 | 2,100,790.88 | 267,774.86 | 3,702,586.36 |
| 74,500.00 | 21,232.22 | 38,589.30 | 877,300.72 | 535,196.23 | 118,535.66 | 1,663,354.13 |
| 167,624.67 | 2,654.65 | 26,566.74 | 650,909.15 | 4,509,643.33 | 60,355.57 | 5,417,814.11 |
| 11,177.39 | 12,255.58 | 17,969.76 | 782,378.23 | 2,247,615.86 | 88,096.76 | 3,159,493.58 |
| 352.21 | 3,132.32 | 12,874.00 | 339,232.63 | 548,782.26 | ..... | 904,373.42 |
| 49,196.73 | 20,510.83 | 28,710.16 | 728,626.59 | 334,794.44 | 30,484.19 | 1,192,322.94 |
| ..... | 8,288.81 | 11,810.44 | 546,748.38 | 686,906.99 | 116,405.79 | 1,370,160.41 |
| ..... | 4,840.71 | 19,682.53 | 257,348.72 | 331,651.28 | ..... | 613,523.24 |
| 219.86 | 13,075.10 | 18,402.92 | 855,407.61 | 741,186.63 | ..... | 1,628,292.12 |
| ..... | 15,348.51 | 12,919.56 | 700,044.52 | ..... | 96,299.06 | 824,611.65 |
| 45,570.54 | 14,233.05 | 29,276.19 | 734,187.37 | 444,872.61 | 85,281.35 | 1,353,421.11 |
| 40,000.00 | 12,553.97 | 15,926.89 | 503,241.61 | 584,487.57 | 82,277.27 | 1,238,487.31 |
| ..... | 25,812.69 | 34,672.91 | 966,376.39 | 130,714.55 | 33,169.71 | 1,190,746.25 |
| ..... | 14,710.94 | 30,882.09 | 511,269.93 | 47,131.30 | 45,916.92 | 649,911.18 |
| 9,449.81 | 24,035.35 | 28,445.60 | 860,543.56 | 900,778.55 | 112,832.98 | 1,936,085.85 |
| 18,000.00 | 20,631.95 | 29,683.13 | 683,538.50 | 374,615.07 | 65,765.86 | 1,192,234.51 |
| 429.46 | 7,936.18 | 39,427.82 | 386,384.09 | 303,547.91 | 58,942.52 | 796,667.98 |
| 20,806.32 | 10,010.68 | 16,230.48 | 257,349.87 | 26,706.92 | ..... | 331,104.27 |
| ..... | 11.86 | 627.75 | 32,836.77 | 49,507.95 | ..... | 82,984.33 |
| 25,000.00 | 15,855.29 | 72,848.92 | 685,360.51 | 1,858.19 | 107,635.73 | 908,558.64 |
| 45,004.50 | 21,115.55 | 29,489.25 | 528,518.80 | 77,720.27 | ..... | 701,848.37 |
| ..... | 6,925.63 | 9,273.25 | 270,774.80 | 967.99 | 45,007.24 | 332,948.91 |
| 373.97 | 13,260.39 | 18,628.74 | 515,346.22 | 139,968.51 | 64,957.92 | 752,535.75 |
| ..... | 18,871.57 | 11,393.30 | 584,983.28 | 119,453.20 | 205,394.67 | 940,096.02 |
| ..... | 2,257.54 | 4,602.23 | 91,796.11 | 65,047.07 | ..... | 163,702.95 |
| ..... | 4,360.29 | 4,369.39 | 157,325.31 | ..... | 168,268.11 | 334,323.10 |
| ..... | 11,797.11 | 30,567.05 | 451,226.25 | .03 | 73,830.26 | 567,420.70 |
| ..... | 5,103.23 | 6,986.00 | 173,232.00 | 10,625.07 | ..... | 195,946.30 |
| ..... | 23,838.47 | 44,771.64 | 687,624.92 | 28,645.27 | 85,441.87 | 870,322.17 |
| 8,782.29 | 12,016.55 | 38,467.81 | 506,956.69 | 334,925.07 | 50,982.90 | 952,131.31 |
| ..... | 19,710.64 | 64,779.49 | 747,950.65 | 322,988.38 | 12,297.91 | 1,167,727.07 |
| ..... | 12,246.54 | 10,139.73 | 265,450.36 | 75,495.28 | ..... | 363,331.91 |
| ..... | 7,826.82 | 14,287.12 | 279,173.32 | 63,515.93 | ..... | 364,803.19 |
| 12,000.00 | 10,193.78 | 17,695.50 | 409,985.26 | 154,520.53 | 22,854.40 | 627,249.47 |
| ..... | 6,377.34 | 41,790.00 | 277,795.35 | 12,953.22 | 69,940.87 | 408,856.78 |
| ..... | 14,553.24 | 13,173.51 | 381,741.24 | 16,168.32 | 83,380.64 | 509,016.95 |
| ..... | 6,630.73 | 13,862.73 | 285,027.00 | 262,362.31 | 24,338.51 | 592,221.28 |
| ..... | 21,128.26 | 29,360.00 | 708,323.51 | 180,568.01 | 63,072.34 | 1,002,452.12 |
| ..... | 24,822.30 | 24,387.54 | 697,329.14 | 304,255.65 | 6,165.85 | 1,056,960.48 |
| ..... | 14,921.33 | 31,373.64 | 288,822.83 | ..... | 73,690.34 | 408,808.14 |
| 20,540.23 | 14,385.75 | 36,309.45 | 527,296.13 | 403,258.99 | 48,235.48 | 1,050,026.03 |
| ..... | 16,339.26 | 86,409.68 | 752,120.79 | 321,417.36 | 94,481.85 | 1,270,768.94 |
| ..... | 15,107.35 | 24,571.36 | 460,735.84 | 223,675.94 | ..... | 724,090.49 |
| ..... | 10,340.19 | 15,576.71 | 227,258.68 | 64,534.51 | ..... | 317,710.09 |
| 25,000.00 | 11,228.86 | 39,044.56 | 298,677.96 | 213,728.88 | ..... | 587,680.26 |
| 31,500.00 | 13,433.90 | 28,933.63 | 571,120.73 | 114,098.72 | •62,864.87 | 821,951.85 |
| ..... | 4,752.65 | 4,981.13 | 106,243.42 | 32,926.57 | ..... | 148,903.77 |
| 8,761.53 | 21,039.09 | 60,693.05 | 442,660.64 | 11,087.82 | ..... | 544,242.13 |

*Statement showing the balance in the hands of each disbursing officer of the Pay Department, States Treasury, or turned over by other agents during the fiscal year ending June 30, or replacement in the Treasury, and the balance remaining in the hands of paymasters*

| Rank and name. | Balance in hands of each paymaster on June 30, 1907. | Remitted from the Treasury in the year ending June 30, 1908. | Received from other paymasters. | Received from paymaster's collections. | Received from soldiers' deposits. | Total received and to be accounted for. |
|---|---|---|---|---|---|---|
| *Captains and paymasters*—Continued. | | | | | | |
| Dallam, S. F. | $60,764.92 | $880,000.00 | $406,607.76 | $52,066.41 | $60,333.96 | $1,459,773.05 |
| Orton, E. P. | 74,862.90 | 810,000.00 | 69,464.91 | 20,185.46 | 58,563.12 | 1,033,076.39 |
| Valentine, W. S. | 11,460.27 | | 618,000.00 | 14,084.14 | 37,675.55 | 681,219.96 |
| Holden, G. J. | 25,619.21 | 238,000.00 | 252,403.66 | 17,291 34 | 14,426.45 | 547,740.66 |
| Arrowsmith, G. D. | | | 561,718.74 | 10,794.62 | 57,400.79 | 629,914.15 |
| Greenough, E. A. | | | 521,016.08 | 6,889.32 | 20,009.58 | 547,914.98 |
| Morton, C. E. | | | 385,000.00 | 7,185.55 | 20,278.46 | 412,464.01 |
| Burt, W. H. | | | 449,227.05 | 9,023.24 | 20,876.54 | 479,126.83 |
| Buffington, A. P. | 151,924.90 | | 240,192.22 | 9,031.32 | 12,538.75 | 413,687.19 |
| Howard, C. E. N. | | | 178,815.39 | 2,653.90 | 7,765.50 | 189,234.79 |
| Frith, R. E. | | | 207,500.00 | 6,647.98 | 16,435.58 | 230,583.56 |
| Anderson, E. D. | | | 50,000.00 | 1,301.19 | 1,489.13 | 52,790.32 |
| *Special disbursing agents.* | | | | | | |
| Wisser, J. P. | 7.04 | | 7,979.00 | | | 7,986.04 |
| Edwards, F. A. | 33.93 | | 5,000.00 | | | 5,033.93 |
| Irons, J. A. | | | 7,611.92 | | | 7,611.92 |
| Kennon, L. W. V. | 1,487.23 | | | | | 1,487.23 |
| Young, J. S. | 15,594.51 | | 5,571.77 | 77.55 | 207.00 | 21,450.83 |
| Slocum, S. L. H. | | | 3,684.06 | | | 3,684.06 |
| Stokes, M. B. | 24,992.22 | | 68,985.38 | 1,686.96 | 19,711.21 | 115,375.77 |
| Reeves, J. H. | 349.97 | | 5,000.00 | | | 5,349.97 |
| Landis, J. F. R. | | | 861.54 | | | 861.54 |
| Baylies, J. | 15,390.92 | | 40,848.69 | 342.36 | 817.00 | 57,398.97 |
| Breckinridge, E. L. D. | 15,876.84 | | 68,567.89 | 2,316.28 | 10,571.10 | 97,332.11 |
| Bolton, E. B. | | | 1.20 | | | 1.20 |
| Guignard, W. S. | 1,863.49 | | 5,001.01 | | | 6,864.50 |
| Clifton, A. T. | 2,783.53 | | 10,000.00 | 175.86 | 1,673.98 | 14,633.37 |
| Schick, J. | | | 87,651.56 | 2,763.08 | 14,393.31 | 104,807.95 |
| Jervey, W. St. J., jr. | | | 46,678.04 | 882.14 | 9,364.25 | 56,924.43 |
| Cordier, C. | | | 3,000.00 | | | 3,000.00 |
| Gibson, W. W. | 526.41 | | 5,000.00 | | | 5,526.41 |
| Cooke, G. F. | | | 75,000.00 | | | 75,000.00 |
| Kreps, J. F. | | | 50,000.00 | | | 50,000.00 |
| Hanigan, H. A. | | | 70,000.00 | | | 70,000.00 |
| Kobbe, F. W. | | | 55,000.00 | | | 55,000.00 |
| Moore, C. B. | | | 6,306.90 | | | 6,306.90 |
| McCammon, E. E. | | | 10,401.74 | | | 10,401.74 |
| Total | 2,953,421.12 | 36,943,213.15 | 28,691,618.37 | 806,965.26 | 1,676,708.68 | 71,071,926.58 |

*United States Army, on the 1st of July, 1907; the amount remitted to each from the United 1908; the amounts accounted for by accounts and vouchers of expenditures, or by transfer to be accounted for in the next fiscal year*—Continued.

| Surplus funds deposited in the Treasury. | Paymaster's collections deposited in the Treasury. | Soldiers' deposits deposited. | Expenditures. | Transferred to other paymasters. | Balance in hands of each paymaster on June 30, 1908. | Total accounted for. |
|---|---|---|---|---|---|---|
| ..... | $52,066.41 | $60,333.96 | $1,067,759.98 | $259,612.70 | ..... | $1,459,773.05 |
| $29,974.73 | 20,185.46 | 58,563.12 | 742,392.36 | 87,000.00 | $94,960.72 | 1,033,076.39 |
| ..... | 14,084.14 | 37,675.55 | 574,192.60 | 24,297.42 | 30,970.25 | 681,219.96 |
| ..... | 17,291.34 | 14,426.45 | 408,787.47 | 96,681.40 | 10,554.00 | 547,740.66 |
| ..... | 10,794.62 | 57,400.79 | 488,197.38 | 4,194.38 | 69,326.98 | 629,914.15 |
| ..... | 6,889.32 | 20,009.58 | 326,923.56 | 149,652.11 | 44,440.41 | 547,914.98 |
| ..... | 7,185.55 | 20,278.46 | 287,239.98 | ..... | 97,760.02 | 412,464.01 |
| ..... | 9,023.24 | 20,876.54 | 328,923.18 | 120,303.37 | ..... | 479,126.83 |
| .03 | 9,031.32 | 12,538.75 | 296,253.61 | 95,863.48 | ..... | 413,687.19 |
| ..... | 2,653.90 | 7,765.50 | 109,974.32 | 4,351.23 | 64,489.84 | 189,234.79 |
| ..... | 6,647.98 | 16,435.58 | 147,156.92 | ..... | 60,343.08 | 230,583.56 |
| ..... | 1,301.19 | 1,489.13 | 37,181.72 | ..... | 12,818.28 | 52,790.32 |
| 7.04 | ..... | ..... | 7,598.39 | ..... | 380.61 | 7,986.04 |
| 33.93 | ..... | ..... | 4,738.46 | 261.54 | ..... | 5,033.93 |
| ..... | ..... | ..... | 7,271.97 | ..... | 339.95 | 7,611.92 |
| ..... | ..... | ..... | ..... | 1,487.23 | ..... | 1,487.23 |
| 5,000.00 | 77.55 | 207.00 | 1,784.47 | 14,381.81 | ..... | 21,450.83 |
| 393.92 | ..... | ..... | 3,290.14 | ..... | ..... | 3,684.06 |
| 20,144.94 | 1,686.96 | 19,711.21 | 66,812.93 | ..... | 7,019.73 | 115,375.77 |
| 25.48 | ..... | ..... | 3,855.95 | ..... | 1,468.54 | 5,349.97 |
| ..... | ..... | ..... | 816.29 | ..... | 45.25 | 861.54 |
| 5,000.00 | 342.36 | 817.00 | 12,358.91 | 38,880.70 | ..... | 57,398.97 |
| 12,066.72 | 2,316.28 | 10,571.10 | 66,071.11 | 6,306.90 | ..... | 97,332.11 |
| ..... | ..... | ..... | ..... | 1.20 | ..... | 1.20 |
| 1,863.49 | ..... | ..... | 3,752.58 | ..... | 1,248.43 | 6,864.50 |
| ..... | 175.86 | 1,673.98 | 7,796.80 | 4,984.73 | ..... | 14,633.37 |
| 9,711.13 | 2,763.08 | 14,393.31 | 67,538.69 | 10,401.74 | ..... | 104,807.95 |
| 3,391.24 | 882.14 | 9,364.25 | 41,892.76 | ..... | 1,394.04 | 56,924.43 |
| 564.92 | ..... | ..... | 2,435.08 | ..... | ..... | 3,000.00 |
| 526.41 | ..... | ..... | 1,604.28 | 3,395.72 | ..... | 5,526.41 |
| ..... | ..... | ..... | ..... | ..... | 75,000.00 | 75,000.00 |
| ..... | ..... | ..... | ..... | ..... | 50,000.00 | 50,000.00 |
| ..... | ..... | ..... | ..... | ..... | 70,000.00 | 70,000.00 |
| ..... | ..... | ..... | ..... | ..... | 55,000.00 | 55,000.00 |
| ..... | ..... | ..... | ..... | ..... | 6,306.90 | 6,306.90 |
| ..... | ..... | ..... | ..... | ..... | 10,401.74 | 10,401.74 |
| 1,008,894.48 | 806,965.26 | 1,676,708.68 | 35,231,857.07 | 28,691,618.37 | 3,655,882.72 | 71,071,926.58 |

# REPORT OF THE CHIEF OF ENGINEERS, MILITARY AFFAIRS.

**To avoid duplication this report is printed in Volume V.**

# REPORT OF THE CHIEF OF ORDNANCE.

To avoid duplication, this report is printed in Volume VI.

# REPORT OF THE CHIEF SIGNAL OFFICER.

# REPORT OF THE CHIEF SIGNAL OFFICER.

WAR DEPARTMENT,
OFFICE OF THE CHIEF SIGNAL OFFICER,
*Washington, June 30, 1908.*

SIR: In submitting the annual report of the Signal Corps of the Army for the fiscal year ending June 30, 1908, it will be convenient to consider the various duties performed under the following general heads:

I. Signal troops for the mobile army.
II. Telegraph and cable systems for Alaska, the Philippine Islands, Cuba, and operations in the United States.
III. Standard fire-control installations for coast defense.
IV. Wireless telegraphy and telephony.
V. Military aeronautics.

The various duties of the Signal Corps prescribed by law have been successfully performed during the current year. Efforts have been continued in the organization of field companies of signal troops for special service with the mobile army. Military telegraph and cable lines and wireless stations have been maintained in the Philippine Islands, Alaska, Cuba, and the United States. The signal corps posts, where are located the schools of instruction for enlisted men and also general supply depots for the Signal Corps, have been operated in an efficient manner. Progress in the installation of the standard fire-control systems for coast defense has been satisfactory. The development of wireless telegraphy for coast defense, for the mobile army, and as a part of the fixed telegraph and cable systems operated by the Signal Corps has been continued. Experiments and tests with wireless telephony have been undertaken with a view to determine its practical use in the different branches of signal corps work. Substantial progress has been made in the subject of military aeronautics, and plans for this new and highly important branch of military work have been formulated, the realization of which must await the action of Congress to provide the necessary funds and personnel.

## I. SIGNAL TROOPS FOR THE MOBILE ARMY.

The present strength of the Signal Corps of the Army has made it impossible to make any adequate provision for the indispensable service of lines of information for the mobile army. In the last annual report the urgent necessities of the case were reported to the War Department, and, with the approval of the Secretary of War, the Lieutenant-General of the army, and the Chief of Staff, proposed legislation to increase the efficiency of the Signal Corps was formulated and is now before Congress for its consideration.

The provisions of this legislation are the result of careful consideration from all available sources of the present needs of the mobile army of the United States, as well as the various technical and special duties at present required of the Signal Corps by law. This office again presents the urgency of this needed legislative relief, and renews the recommendations embodied in this bill, which provides that the Signal Corps shall consist of—

One chief signal officer, with the rank of brigadier-general, four colonels, four lieutenant-colonels, twelve majors, thirty-six captains, thirty-six first lieutenants, thirty-six second lieutenants, one hundred master signal electricians, three hundred first-class sergeants, three hundred sergeants, three hundred corporals, one thousand two hundred first-class privates, three hundred privates, sixty cooks, forty-eight farriers and blacksmiths, twenty-four saddlers, twenty-four wagoners, forty-eight trumpeters, and one band, as now authorized by law for bands of cavalry regiments, and each grade shall receive the rank, pay, and allowances as now provided by law: *Provided*, That the Chief Signal Officer of the Army shall be appointed as now provided by law, and vacancies thus created shall be filled, first, by the promotion of officers holding permanent appointments in the Signal Corps according to seniority, after the examination now required by law, and, second, by details to the Signal Corps from the Army at large from the grade in which the vacancy exists or the grade below: *Provided*, That officers so detailed in the grades below that of major shall not be again eligible for such detail until they shall have served for at least one year away from that corps: *Provided further*, That the Signal Corps of the Army shall be organized as may be directed by the President of the United States, and the officers and enlisted men assigned to duty with troops shall, when so specially designated by the President, constitute a part of the line of the Army.

Until Congress takes some action to increase the number of officers and men of the Signal Corps, the mobile army of the United States must remain vitally weak in a service where it should be strongest.

The extended terrane at present involved in military operations, and the great range at which modern weapons kill, makes the supreme commander of an army in the field practically helpless in controlling the units of his force without the most perfect lines of information connecting him with the different units of his army and following him and them at all times during active military operations in campaign.

The existing three combatant arms of the service, namely, infantry, cavalry, and artillery are fundamentally designed to act cooperatively with one another to produce the maximum result in combat. It is evident that with the great terrane involved in a modern battle and the large number of troops engaged, the whole cooperative plan of the three combatant arms must surely fail without the presence of highly trained signal troops, which places in the hands of the supreme commander the only known means at present of securing accurate command of his army from hour to hour.

Military lines of information not only serve as a means of obtaining the information upon which the movements are based, but which is of equal importance, furnish the only means of actually utilizing this information in controlling and operating the units of an army as one gigantic whole.

During the current year there have been organized two field companies of signal troops, namely, Company D, stationed at Fort Omaha, Nebr., and Company E, stationed at the Presidio of San Francisco, Cal. These two companies are supplemented by Company I, *stationed in Cuba*, and Company A, on duty under the commandant

of the army-service schools, Fort Leavenworth, Kans. These four companies consist of approximately 75 men each and are based upon the model developed at the Army Signal School for special service in furnishing tactical lines of information in campaign.

### ORGANIZATION OF FIELD COMPANIES.

The organization of field companies and the allowance of transportation for the same was authorized by the Acting Secretary of War, September 16, 1907, and announced in Circular No. 7, Signal Office, October 11, 1907, as follows:

*Field company.*—One captain; 3 lieutenants; 3 master signal electricians; 10 sergeants, first-class; 10 sergeants; 10 corporals; 45 privates, first-class; 20 privates; 2 cooks. Total enlisted, 100.

The allowance of transportation for such a company in time of war is 90 riding horses; 6 reel carts, 2 draft horses each; 3 instrument wagons, 4 mules each; 2 escort wagons (general transportation), 4 mules each; 9 pack mules.

Due to shortage of both officers and men at present, each of the companies thus far organized consist of about 75 enlisted men and 3 officers (1 captain and 2 lieutenants), and the allowance of animals is about 60 horses and 25 mules.

A field signal company is to provide lines of information for tactical use during combat, maneuvers, rapid marches, etc. Each field company is provided with suitable equipment to furnish tactical lines of information by visual signaling, wireless telegraphy, buzzer and other field telegraph and telephone lines. The amount of equipment is sufficient for a field company to construct, operate, and maintain 40 miles of field lines, 30 miles of buzzer lines, 2 portable wireless telegraph stations having a normal radius of 20 miles, and 6 visual signaling stations.

As stated above, with the present entirely inadequate strength of the Signal Corps, both in officers and men, it has been possible to provide only 3 field companies of signal corps troops for the United States, and such was the demand for these troops during the current summer that it became necessary, at considerable extra expense to the Government, to send these companies from one camp to another in order that some signal service might be provided, there being less than half as many field signal companies in the United States as there were maneuver camps. There is to-day not a single field company anywhere available in the United States east of the Missouri River, and in case the mobile force was required for service but 3 such companies could be produced.

Progress in the development of the technical vehicles required in this work has been made, and each of these companies is at present a mounted organization.

These 3 field companies stationed in the United States were assigned to duty at the maneuver camps held during the current summer as follows: Company A at camps at Chickamauga Park, Ga., Fort D. A. Russell, Wyo., and Fort Riley, Kans.; Company D at camps at Leon Springs, Tex., and Fort Benjamin Harrison, Ind.; Company E at camps at American Lake, Wash., and Atascadero, Cal.

The maneuver camp at Pine Plains, N. Y., was totally without any signal service in connection with any of the problems of the camp.

The value of lines of information for a mobile army increases very rapidly as the distance increases. For a military message to be transmitted 20 miles and its delivery acknowledged, electricity is so far superior to any other known agency as to make its use imperative. For this reason the indispensable service of signal troops with an army is made more and more apparent as the problem involves larger units and a greater terrane. On this account the Signal Corps requires for its proper training in peace military problems and maneuvers involving distances of from 5 to 200 miles, and its use in small problems such as can be carried out at an army post does not furnish any adequate idea of its military importance when the army is organized into brigades, divisions, and corps for active operations.

### PROPOSED GRAND MANEUVERS CONDUCTED BY MILITARY LINES OF INFORMATION.

The present system of military education, both for the Regular Army and the organized militia, does not provide for the adequate instruction of officers of high rank, and such officers comprise the very class, both in the Regular Army and the organized militia, which in the event of war would be placed in command. It is highly important, therefore, that this class of officers should be provided, if possible, with better opportunities for practical instruction than at present obtain.

It can hardly be expected that Congress will make appropriations for maneuvers on a sufficiently large scale to give general officers scope for practice in actual command in time of peace, except at intervals of several years. It is believed, therefore, that an important feature of military instruction particularly adapted to officers of high rank can be obtained by means of telegraphic maneuvers without troops.

In conducting such maneuvers the general plan would be similar to the present method of conducting the war game, except that the officers engaged would occupy their real positions in the terrane and be required to make their estimates of the situation, disposition of troops, and issue orders, etc., from actual study and observation in the terrane itself. The troops of the line involved would be imaginary, while the headquarters of corps, divisions, and brigades would be real and in their relative positions in the terrane throughout the progressive problem involving concentration, strategic marches, contact, and combat.

In such a progressive problem the only real troops required would be such field companies of signal troops as are available for furnishing the tactical lines of information, the strategical lines being lines leased from commercial companies for the period of the maneuvers, as would be done in case of war.

Such maneuvers could be carried out with comparatively small expense in the different States with the organized militia or the national guard, and also by the different department commanders in their own departments.

### THE DEVELOPMENT OF SIGNAL TROOPS IN THE ORGANIZED MILITIA.

The passage of the militia bill of January 21, 1903, with its subsequent amendments, has already accomplished much in the develop-

ment of the organized militia, and it is recognized that in case of war with a first-class power the Signal Service will be obliged to depend largely upon the organized militia. The act of Congress approved May 27, 1908, requires that on and after January 21, 1910, the organization, armament, and discipline of the organized militia shall be the same as that prescribed for the Regular Army. To this end the signal office has initiated steps through the division of militia affairs looking to the encouragement in every possible way of the service of tactical lines of information in the national guard. At the present moment this service in the organized militia is far from satisfactory. In some of the larger States which have well-organized militia there is either an entirely inadequate signal service or none at all.

*Statement showing organizations of Signal Corps, Organized Militia, as reported by officers of the army who made the 1908 inspection under section 14 of the militia law of January 21, 1903.*

| State or Territory. | Organization: Company or detachment. | Station. | Commissioned officers. | Enlisted men. |
|---|---|---|---|---|
| Alabama | | | | |
| Alaska | | | | |
| Arizona | | | | |
| Arkansas | Staff Corps | Little Rock | 2 | |
| California | First Company | Los Angeles | 3 | 33 |
| | Second Company | San Francisco | 2 | 16 |
| Colorado | Detachment | Denver | 1 | 10 |
| Connecticut | First Company | Hartford | 4 | 54 |
| Delaware | | | | |
| District of Columbia | Corps | Washington | 1 | 17 |
| Florida | Staff Corps | St. Augustine | 1 | |
| Georgia | | | | |
| Hawaii | First Company | Honolulu | 2 | 38 |
| Idaho | | | | |
| Illinois | Corps | Chicago | 3 | 49 |
| Indiana | do | Indianapolis | 4 | 38 |
| Iowa | Staff Corps | Des Moines | 1 | |
| Kansas | Corps | Wellington | 2 | 13 |
| Kentucky | | | | |
| Louisiana | Corps | New Orleans | 5 | 67 |
| Maine | | | | |
| Maryland | | | | |
| Massachusetts | Corps | Boston | 4 | 54 |
| Michigan | do | Lansing | 5 | 85 |
| Minnesota | | | | |
| Mississippi | Staff Corps | Jackson | 2 | |
| Missouri | Company A | Jefferson City | 1 | 22 |
| Montana | | | | |
| Nebraska | Corps | Lincoln | 3 | 54 |
| Nevada | | | | |
| New Hampshire | | | | |
| New Jersey | Corps | Jersey City | 3 | 56 |
| New Mexico | do | Roswell | 1 | 15 |
| New York | First Company | New York | 3 | 89 |
| | Second Company | Brooklyn | 3 | 72 |
| North Carolina | | | | |
| North Dakota | | | | |
| Ohio | First Company | Toledo | 3 | 47 |
| | Second Company | Columbus | 2 | 37 |
| Oklahoma | Corps | Blackwell | 3 | 36 |
| Oregon | | | | |
| Pennsylvania | | | | |
| Rhode Island | Corps | Providence | 2 | 17 |
| South Carolina | | | | |
| South Dakota | | | | |
| Tennessee | | | | |
| Texas | Company A | Brenham | 3 | 26 |
| Utah | Corps | Salt Lake City | 2 | 14 |
| Vermont | do | Northfield | 4 | 41 |
| Virginia | | | | |
| Washington | Company A | Seattle | 1 | 35 |
| West Virginia | | | | |
| Wisconsin | | | | |
| Wyoming | | | | |
| Total | | | 76 | 1 035 |

It appears from the foregoing table that the following States and Territories have no organized signal corps troops: Alabama, Alaska, Arizona, Delaware, Georgia, Idaho, Kentucky, Maine, Maryland, Minnesota, Montana, Nevada, New Hampshire, North Carolina, North Dakota, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Virginia, West Virginia, Wisconsin, Wyoming; that the total strength of signal corps troops in the entire organized militia is 76 commissioned officers and 1,035 enlisted men, or about 1 per cent of the total organized militia.

The signal companies already organized in the different States have no uniform equipment or system of training, but this should not be understood as placing the fault upon the organizations themselves or the state authorities. As a rule the signal troops in the States comprise some of the most energetic, intelligent, and efficient of the men of the national guard. They are usually men of a higher order of intelligence, such as telegraph operators, train dispatchers, practical electrical engineers, etc., and under proper training are capable of being molded into high class and efficient signal companies and battalions. In this development it is proper that the signal service of the Regular Army should serve as a guide, and the equipment and training should as far as possible be uniform throughout the militia with that of the Regular Army.

The dependence which the country must place upon the organized militia for signal troops in case of war, as well as for other branches of the military service, is well recognized. The real military needs of the country at present involve some radical changes in our military policy, and it should be the duty of the War Department frankly to place the facts before Congress in a conservative and careful manner in order that the country may not be uninformed as to the real military situation.

Due to our geographic position, it is considered impossible for any nation at present to land and maintain in the United States a force greater than 250,000 combatants until it has established absolute command of the sea. On this assumption there would seem to be no reason for the United States having available for its first line a greater force than 450,000 combatants. Of this number at least one-third should be available at once to meet a sudden attack at a threatened point. This evidently would require a regular army subject to immediate expansion to 150,000 men, and would require an organized militia of 300,000 men under the call of the executive for federal service.

In regard to the proportion of the different arms which should compose this force, there is little accurate data available concerning signal troops. A careful study of the composition of the different armies of the world, particularly those of Germany, France, Japan, and England, furnishes a fairly accurate guide as to the relative proportions of different arms for infantry, cavalry, and field artillery, but does not furnish reliable data for the proportion of these troops which should constitute the service of lines of information. The reason for this is that in every other army of the world this service of information, corresponding to the Signal Corps of the American army, is performed as a part of the function of some other department. The American army is the only army which has recognized *the tactical* and strategical importance of this service and has

placed it under a separate corps. The wisdom of this action is being clearly demonstrated at the present time, and England in particular at this moment is pointing out the superiority of the American idea in this respect and urging upon its authorities the following in our footsteps. From the above fact it has been impossible up to the present to determine from a study of these armies just what proportion constitutes the service of the Signal Corps for the mobile army. From the experience gained in our own service and from such information as can be obtained from foreign armies, it is believed that a conservative estimate is 2½ per cent of the combatant force as the minimum which can be safely used for the service of lines of information for the mobile army. This would be approximately 3 per cent of the infantry command, which, perhaps, is a better basis to start from than the 2½ per cent of the total force.

From the above general statement of what is believed to be the safe military needs of our country at present, it is readily seen what reliance must be placed upon the organized militia or national guard. On the basis of 2½ per cent, it appears that no less than 7,500 signal corps troops should be ultimately provided in the national guard to adequately meet the military situation as it exists at present. Realizing the need of this indispensable service for any army which is to operate in campaign, the Signal Office has recently taken steps to encourage in every possible way the authorization of signal troops in each of the different States, and their equipment and training along the lines of such troops in the Regular Army.

## II. TELEGRAPH AND CABLE SYSTEMS AND OPERATIONS IN THE UNITED STATES.

### ALASKA.

The Washington-Alaska military cable and telegraph system continued to work satisfactorily during the year, barring interruptions incident to storms, forest fires, flood, and ice. The most serious interruptions and those which resulted in the greatest delays were due to forest fires in the vicinity of Fort Gibbon. It will probably be necessary to rebuild many miles of line in the burned district.

The system consists of 2,524 miles of submarine cable, 1,403 miles of land lines, and 879 miles of wireless, there having been an increase in wireless of 772 miles. The cable system remains the same as at the date of my last annual report—namely, the main line from Seattle to Sitka, Sitka to Valdez, Valdez to Seward, with branch lines from Sitka to Juneau, Valdez to Liscum, Juneau to Haines Mission, Haines Mission to Skagway, Cape Fanshaw to Wrangell, Wrangell to Hadley, and Hadley to Ketchikan. Land lines connect with the cable system at Valdez and extend from that point to Fort Egbert and St. Michael, and by wireless from St. Michael to Safety and Nome.

### ADMINISTRATION.

The system has been under the direction of the chief signal officer, department of the Columbia, at Seattle, Wash.

For purposes of administration and supply the system is divided into four sections, with officers of the Signal Corps conducting these administrative functions. The lines between Valdez and Fort Egbert

and to Paxson comprise the first and second sections; those from Paxson to the Tanana, down that river to the Yukon, and thence to Kaltag, the third section; and those west of Kaltag the fourth section.

*Stations and distances.*

| | Intermediate. | Total. |
|---|---|---|
| LAND LINES. | | |
| *Nome—Valdez Station.* | *Miles.* | *Miles.* |
| Nome | 0 | 0 |
| Fort Davis | 4 | 4 |
| Safety | 20 | 24 |
| St. Michael (wireless) | 107 | 131 |
| Golsova | 35 | 166 |
| Unalakleet | 30 | 196 |
| Old Woman | 50 | 246 |
| Kaltag | 45 | 291 |
| Nulato | 40 | 331 |
| Koyukuk | 30 | 361 |
| Louden | 50 | 411 |
| Melozi | 35 | 446 |
| Kokrines | 38 | 484 |
| Birches | 40 | 524 |
| Fort Gibbon | 55 | 579 |
| Rapids | 24 | 603 |
| Rampart | 23 | 626 |
| Glen | 35 | 661 |
| Hot Springs | 21 | 682 |
| Tolovana | 37 | 719 |
| Minto | 39 | 758 |
| Nenana | 35 | 783 |
| Chena | 29 | 822 |
| Fairbanks | 10 | 832 |
| Salcha | 37 | 869 |
| Delta | 29 | 898 |
| Richardson | 2 | 900 |
| McCarty | 20 | 920 |
| Donnely | 40 | 960 |
| McCallum | 37 | 997 |
| Paxson | 18 | 1,015 |
| Hogan | 29 | 1,044 |
| Gulkana | 37 | 1,081 |
| Copper Center | 26 | 1,107 |
| Tonsina | 25 | 1,132 |
| Teikhell | 24 | 1,156 |
| Saina | 24 | 1,180 |
| Thompson Pass | 5 | 1,185 |
| Wortmans | 7 | 1,192 |
| Valdez | 19 | 1,211 |
| *Fort Egbert branch.* | | |
| Gulkana | 0 | 1,211 |
| Talsona | 20 | 1,231 |
| Chistochina | 20 | 1,251 |
| Mentasta | 46 | 1,297 |
| Tanana Crossing | 51 | 1,348 |
| Ketchumstock | 55 | 1,403 |

| | Intermediate. | Total. |
|---|---|---|
| LAND LINES—continued. | | |
| *Fort Egbert branch*—Cont'd. | *Miles.* | *Miles.* |
| North Fork | 19 | 1,422 |
| Fort Egbert | 68 | 1,490 |
| Boundary | 12 | 1,502 |
| CABLES. | | |
| *Seattle-Seward.* | | |
| Seattle | 0 | 0 |
| Sitka | 1,085 | 1,085 |
| Valdez | 599 | 1,684 |
| Fort Liscum | 4 | 1,688 |
| Seward | 189 | 1,877 |
| Montague Island - Cordova-Cape Whitshed | 68 | 1,945 |
| *Sitka-Skagway.* | | |
| Sitka | 0 | 1,945 |
| Cape Fanshaw (no station) | 211 | 2,156 |
| Juneau | 98 | 2,254 |
| Haines Mission | 106 | 2,360 |
| Skagway | 18 | 2,378 |
| *Cape Fanshaw-Ketchikan.* | | |
| Cape Fanshaw (no station) | 0 | 2,378 |
| Wrangell | 63 | 2,441 |
| Hadley | 69 | 2,510 |
| Ketchikan | 28 | 2,538 |
| *Lawton-Worden.* | | |
| Fort Lawton | 0 | 2,538 |
| Fort Worden | 42 | 2,580 |
| *Ward-Lawton.* | | |
| Fort Ward | 0 | 2,580 |
| Fort Lawton | 12 | 2,592 |
| WIRELESS. | | |
| Egbert-Circle | | 162 |
| Circle-Fairbanks | | 180 |
| Fairbanks-Gibbon | | 150 |
| Gibbon-Nome | | 390 |
| Nome-St. Michael | | 131 |
| Petersburg-Wrangell | | 49 |
| Total | | 1,062 |

RECAPITULATION.

| | Miles. |
|---|---|
| Land lines | 1,395 |
| Wireless | 1,062 |
| Cables | 2,592 |
| | 5,049 |

There are 52 telegraph offices and 12 cable offices in this system, of which 20 are money-transfer offices. During the year the total number of messages handled was 96,521 commercial and 37,891 official.

The line receipts amounted to $206,888.85 "this line," $22,937 "other lines," and government business was handled to the value of $144,641.12. The largest amount of business done in any one month during the year was in August, 1907, when the receipts were $25,497.

## EXTENSIONS AND BETTERMENTS.

### CABLES.

The changes, repairs, additions, etc., to the cable system are described under the heading "cable ship *Burnside*."

### LAND LINES.

The Gakona-Delta cut-off, commenced January 9, 1907, was completed September 5, 1907, permitting abandonment of the North Fork-McCarty line soon afterwards. Rebuilding and placing a second wire on the line between Valdez and Gulkana was begun April 25, 1908, and it is expected that the extension of this second wire to McCarty will be finished before the end of the present year.

*Detail statement of expenditures under army appropriation act approved March 2, 1907.*

| | | |
|---|---|---|
| Appropriation | | $190,000.00 |
| Expended: | | |
| Wireless installations | $60,552.35 | |
| Land lines | 29,416.03 | |
| Cable system | 65,163.23 | |
| Total expenditures | | 155,131.61 |
| Unexpended balance | | 34,868.39 |

The army appropriation act approved May 11, 1908, provides that of the receipts of the Washington-Alaska military cable and telegraph system that has been covered into the Treasury of the United States the sum of $200,000 is appropriated and made available for defraying the cost of such extensions and betterments of the system as may be approved by the Secretary of War.

### CABLE SHIP BURNSIDE.

The *Burnside*, early in August, 1907, proceeded to Alaskan waters for the purpose of making necessary repairs and performing other work in connection with the cable system. After removing a fault in the Valdez-Sitka cable August 23, a survey was made of Montague Island with a view of locating a landing place for the branch to Cordova. The cable ship then proceeded to Sitka and there connected the naval wireless station on Japonski Island with the cable office at Sitka; sailed for Juneau, and en route to that point relocated the cable off the southern end of Douglas Island; from Juneau proceeded to Cape Fanshaw and made repairs to cable house there; surveyed waters in the vicinity of Petersburg with a view to landing cable. September 28 the *Burnside* proceeded under telegraphic instructions to Valdez with the governor of Alaska. Upon notification of interruption of the Valdez-Sitka cable the vessel proceeded to sea October 2. The fault was located about 170 miles from Sitka, and communication was restored on the 7th. Repairs were made to the cable landings at Fort William H. Seward, Wrangell, Hadley, and Ketchikan; returned to Puget Sound October 30, and proceeded with the relaying of the Fort Lawton-Fort Flagler cable. Upon comple-

tion of this work the ship proceeded to Tacoma, Wash., and loaded new cable, returning to Seattle and remaining there until February 17, 1908. The *Burnside* then proceeded to Valdez to remove a fault in the Valdez-Sitka cable, and also repaired the Valdez-Seward cable. While undergoing repairs at Tacoma, interruption was reported in the Valdez-Sitka cable and the ship was again sent to Alaskan waters, restoring communication April 11.

## TELEGRAPH RESERVATIONS.

Since the last report of the Chief Signal Officer, there have been reserved and set apart for the use of the Signal Corps in the operation and maintenance of the United States military telegraph and cable lines in Alaska the following:

By order dated August 1, 1907, the military reservation at Old Woman, erroneously described by Executive order of September 21, 1905, is modified so that said reservation shall comprise all public lands, and those only, included within metes and bounds as follows:

Beginning at a spruce stump 4 feet high, located on the northeast bank of a slough of the Old Woman River, marked "I.S.U.S.M.R."; thence true east 790 feet to a stake 4 feet high; thence true north 1,000 feet to a stake 4 feet high; thence true west 1,060 feet to a stake 4 feet high, the northwest corner of the original reservation; thence continuing true west 400 feet, more or less, to a stake; thence true south 560 feet, more or less, to a stake; thence true east 400 feet, more or less, to a stake; thence true south 440 feet, more or less, to a stake 4 feet high, the southwest corner of the original reservation; thence true east 270 feet to point of beginning; containing 29.48 acres, more or less. The bearings are true; magnetic variation (1907) 19° 30′ east. (General Orders, No. 175, 1907.)

By order dated October 23, 1907, the following was reserved, subject to private rights:

*Donnely.*—Beginning at a post on the bank of the Big Delta River, about three-quarters of a mile south of Donnely's road house, marked "U.S.M.R.No.1"; thence south one mile to a post marked "U.S.M.R.No.2"; thence east one mile to post marked "U.S.M.R.No.3"; thence north one mile to post marked "U.S.M.R.No.4"; thence west one mile to point of beginning.

*McCallum.*—Beginning at a post three hundred feet east and one thousand nine hundred and fifty-six feet north of northeast corner of McCallum's road house, marked "U.S.M.R.No.1;" thence south one mile to post marked "U.S.M.R.No.2;" thence east one mile to post marked "U.S.M.R.No.3;" thence north one mile to post marked "U.S.M.R.No.4;" thence west one mile to point of beginning.

*Paxson.*—Station reserve: Beginning at a post one hundred and fifty-two feet north and four hundred and sixty-two feet west of northwest corner of Paxson's road house, marked "U.S.M.R.No.1;" thence east one thousand feet to post marked "U.S.M.R.No.2;" thence north one thousand feet to post marked "U.S.M.R.No.3;" thence west one thousand feet across Gulkana River to post marked "U.S.M.R.No.4;" thence south one thousand feet across Gulkana River to point of beginning.

*Paxson.*—Timber reserve: Beginning at a post one mile south and two thousand one hundred and twelve feet east of initial point of station reserve marked "U.S.M.R.No.1;" thence west three thousand nine hundred and sixty feet to post marked "U.S.M.R.No.2;" thence south one mile to post marked "U.S.M.R.No.3;" thence east three thousand nine hundred and sixty feet to post marked "U.S.M.R.No.4;" thence north one mile to point of beginning.

*Right of way.*—A strip of land one hundred feet wide (fifty feet on each side of the center of telegraph line) along the United States military telegraph line from Gulkana Station, near the mouth of the Gulkana River, to McCarty Station, near the mouth of the Big Delta River, which, owing to its length of one hundred and sixty-one miles, more or less, is necessarily unstaked.

The reservation at Central and Summit, and that portion of the right of way between Northfork and McCarty, Alaska, which were reserved for military telegraph purposes by executive order, dated May 24, 1905 (G. O. No. 83, War Department, June 5, 1905), having become useless for the purposes for which reserved, are hereby placed under the control of the Secretary of the Interior, under act of Congress approved July 5, 1884 (23 Stat. L., 103), for disposition under said act or as may be otherwise provided by law. (General Orders, No. 224, 1907.)

By order dated January 18, 1908, the following was reserved, subject to private rights:

That tract of land included within metes and bounds as follows:

*Minto.*—Beginning at a spruce post on the bank of the Tanana River and marked "Stake No. 1;" thence N. 18° 00′ E., 1,370 feet to a blazed spruce tree marked "Stake No. 2;" thence N. 72° 00′ W., 1,320 feet to a blazed spruce tree marked "Stake No. 3;" thence S. 18° 00′ W., 1,660 feet to a blazed cottonwood tree marked "Stake No. 4" on the bank of the Tanana River; thence in an easterly direction, following the meanderings of said river, approximately 1,320 feet, to "Stake No. 1," the point of beginning. Area, 45.91 acres, more or less. The bearings are true. (General Orders, No. 19, 1908.)

By order dated March 3, 1908, the following was reserved, subject to private rights:

That tract of land included within metes and bounds as follows:

*Hogan.*—Beginning at a point 300 feet west and 2,640 feet north of the middle point of the west wall of the telegraph station, designated by a post marked "U.S.M.R.No.1;" thence south 5,280 feet to a post marked "U.S.M.R.No.2;" thence east 5,280 feet to a post marked "U.S.M.R.No.3;" thence north 5,280 feet to a post marked "U.S.M.R.No.4;" thence west 5,280 feet to the point of beginning. Area, 640 acres, more or less. Bearings true—assuming variation of needle to be thirty-two degrees. (General Orders, No. 34, 1908.)

By order dated April 4, 1908—

The following described parcel of land situated in Sitka, Alaska, which was included in the reservations for public purposes made on the recommendation of the Secretary of the Interior, dated June 19, 1890, by executive order, dated June 21, 1890, is hereby transferred from the Navy Department to the War Department for the use of the Signal Corps, U. S. Army, as a site for a cable house and station in the operation of military cable and telegraph lines in Alaska, viz:

All that parcel of land included within metes and bounds as follows:

Commencing at low-water mark on the south side of the west end of Lincoln street; thence along the south side of said Lincoln street about 200 feet in a northeasterly direction to the northwest corner of lot occupied by United States court-house and jail building; thence in a southeasterly direction along the west fence of said lot 200 feet to low-water mark; and thence along low-water mark in a westerly and northwesterly direction to the point of beginning. (General Orders, No. 61, 1908.)

By order dated April 16, 1908, the following was reserved, subject to private rights, for a wireless telegraph station at Fairbanks, Alaska:

That tract of land included within metes and bounds as follows:

Beginning at a stake, centered with a tack, and marked "Initial Stake No. 1;" thence N. 81° 50′ E. 18 feet to the left bank of the Chena River at its intersection with the south line of the Independent Lumber Company's property; thence in a southerly direction following the meanderings of the left bank of the Chena River approximately 853 feet; thence S. 81° 50′ W. 16 feet to a stake, centered with a tack, and marked "Stake No. 2;" thence S. 81° 50′ W. 1,100 feet to a stake, centered with a tack, and marked "Stake No. 3;" thence N. 8° 10′ W. 850 feet to a stake, centered with a tack, and marked "Stake No. 4;" thence N. 81° 50′ E. 982 feet to initial stake No. 1, the point

of beginning. Area, 19 acres, more or less. All courses are referred to the true meridian. (General Orders, No. 66, 1908.)

By order dated May 4, 1908, the following was reserved, subject to private rights:

*1. Kaltag* (Lat. 64° 15′ N.; long. 158° 40′ W.).—Beginning at a stake on the bank of the Yukon River and marked "Stake No. 1," N. 58° 00′ W. 618 feet to a stake marked "Stake No. 2;" thence N. 32° 00′ E. 195 feet to a stake marked "Stake No. 3;" thence S. 58° 00′ E. 618 feet to a stake on the bank of the Yukon River and marked "Stake No. 4;" thence in a southerly direction approximately 195 feet, following the meanderings of the bank of the Yukon River to Stake No. 1, the point of beginning. Area, 2.766 acres, more or less. The bearings are true.

*2. Nulato* (Lat. 64° 42′ N.; long. 158° 00′ W.).—Beginning at a stake on the bank of the Yukon River and marked "Stake No. 1," following the meanderings of the bank of the Yukon River in an easterly direction to a stake on the bank of the Yukon River and marked "Stake No. 2;" thence due north 325 feet to a stake marked "Stake No. 3;" thence due west 110 feet to a stake marked "Stake No. 4;" thence due south, following the eastern line of the Catholic Mission homestead, 325 feet to Stake No. 1, the point of beginning. Area, 0.821 acre, more or less. The bearings are true.

*3. Koyukuk* (Lat. 64° 54′ N.; long. 157° 30′ W.).—Beginning at a stake on the bank of the Yukon River and marked "Stake No. 1," N. 10° 00′ W. 1,000 feet to a stake marked "Stake No. 2;" thence S. 80° 00′ W. 1,000 feet to a stake marked "Stake No. 3;" thence S. 10° 00′ E. 1,000 feet to a stake on the bank of the Yukon River and marked "Stake No. 4;" thence following the meanderings of the bank of the Yukon River in an easterly direction approximately 1,000 feet to Stake No. 1, the point of beginning. Area, 22.956 acres, more or less. The bearings are true.

*4. Louden* (Lat. 64° 37′ N.; long. 156° 35′ W.).—Beginning at a stake at the top of the bank of the Yukon River and marked "Stake No. 1," due north 1,000 feet to a stake marked "Stake No. 2;" thence due west 1,000 feet to a stake marked "Stake No. 3;" thence due south 1,000 feet to a stake marked "Stake No. 4," and located at the top of the bank of the Yukon River; thence following the meanderings of the bank of the Yukon River in an easterly direction approximately 1,000 feet to Stake No. 1, the point of beginning. Area, 22.956 acres, more or less. The bearings are true.

*5. Melozi* (Lat. 64° 44′ N.; long. 155° 28′ W.).—Beginning at a stake on the bank of the Yukon River and marked "Stake No. 1," following the meanderings of said bank in an easterly direction approximately 1,000 feet to a stake on the bank of the Yukon River marked "Stake No. 2;" thence N. 32° 00′ E. 1,000 feet to a stake marked "Stake No. 3;" thence S. 82° 00′ W. 1,000 feet to a stake marked "Stake No. 4;" thence S. 32° 00′ W. 1,000 feet to Stake No. 1, the point of beginning. Area, 18.319 acres, more or less. The bearings are true.

*6. Kokrines* (Lat. 64° 53′ N.; long. 154° 30′ W.).—Beginning at a stake on the bank of the Yukon River at high-water mark and marked "Stake No. 1," N. 2° 00′ E. 600 feet to a stake marked "Stake No. 2;" thence S. 88° 00′ E. 600 feet to a stake marked "Stake No. 3;" thence S. 2° 00′ W. 600 feet to a stake on the bank of the Yukon River marked "Stake No. 4;" thence in a westerly direction following the meanderings of the bank of the Yukon River to Stake No. 1, the point of beginning. Area, 8.262 acres, more or less. The bearings are true.

*7. Birches* (Lat. 65° 06′ N.; long. 53° 15′ W.).—Beginning at a stake on the bank of the Yukon River and marked "Stake No. 1," following the meanderings of the bank of the Yukon River in an easterly direction to another stake on the bank of the Yukon River and marked "Stake No. 2," approximately 1,000 feet; thence N. 28° 00′ W. 1,000 feet to a stake marked "Stake No. 3;" thence S. 62° 00′ W. 1,000 feet to a stake marked "Stake No. 4;" thence S. 28° 00′ E. 1,000 feet to Stake No. 1, the point of beginning. Area, 22.956 acres, more or less. The bearings are true.

*8. Rapids* (Lat. 65° 16′ N.; long. 150° 45′ W.).—Beginning at a stake at the top of the bank of the Yukon River and marked "Stake No. 1," N. 12° 00′ W. 1,000 feet to a stake marked "Stake No. 3;" thence S. 54° 00′ W. 1,000 feet to a stake marked "Stake No. 3;" thence S. 12° 00′ E. 1,000 feet to a stake at the top of the bank of the Yukon River and marked "Stake No. 4;" thence following the meanderings of the bank of the Yukon River in an easterly direction ap-

proximately 1,000 feet to Stake No. 1, the point of beginning. Area, 21.235 acres, more or less. The bearings are true.

*9. Hot Springs* (Lat. 64° 58′ N.; long. 151° 10′ W.).—Beginning at a stake at the top of the bank of a slough of the Tanana River; said stake being located on the western boundary line of the homestead of J. M. Hall, and marked "Stake No. 1;" thence in a westerly direction, following the meanderings of the bank of the above-mentioned slough, approximately 1,320 feet to a stake on the bank of the said slough, and marked "Stake No. 2;" thence S. 10° 00′ W. 1,320 feet to a stake marked "Stake No. 3;" thence S. 80° 00′ E. 1,320 feet to a stake marked "Stake No. 4," and located on the western boundary line of the homestead of J. M. Hall; thence N. 10° 00′ E. 1,320 feet, following the western boundary line of the said homestead, to Stake No. 1, the point of beginning. Area, 40 acres, more or less. The bearings are true.

*10. Tolovana* (Lat. 64° 50′ N.; long. 149° 55′ W.).—Beginning at a cottonwood post on the bank of the Tanana River which marks an upper corner of the homestead of J. C. Riley, and marked "Stake No. 1," N. 38° 00′ W., following the line of the said homestead 325 feet to a cottonwood stump, which marks an angle of said homestead, and marked "Stake No. 2;" thence N. 52° 00′ E. following the line of said homestead, 1,320 feet to a spruce stump, which marks a corner of said homestead, and marked "Stake No. 3;" thence S. 38° 00′ E. 325 feet to a cottonwood stump marked "Stake No. 4;" thence following the meanderings of the bank of the Tanana River in a westerly direction approximately 1,320 feet to Stake No. 1, the point of beginning. Area, 9.848 acres, more or less. The bearings are true.

*11. Nenana* (Lat. 64° 40′ N.; long. 148° 30′ W.).—Beginning at a square blazed pine tree on the top of the bank of the Tanana River and marked "Stake No. 1," N. 32° 00′ E. 1,500 feet to a square blazed tree marked "Stake No. 2;" thence N. 58° 00′ W. 1,500 feet to a square blazed tree marked "Stake No. 3;" thence S. 32° 00′ W. 1,500 feet to a square blazed stump on the top of the bank of the Tanana River and marked "Stake No. 4;" thence in an easterly direction, following the meanderings of the bank of the Tanana River, approximately 1,500 feet to Stake No. 1, the point of beginning. Area, 51.652 acres, more or less. The bearings are true.

*12. Salcha* (Lat. 64° 33′ N.; long. 147° 15′ W.).—Beginning at a stake marked "Stake No. 1," S. 12° 00′ E. 2,600 feet to a stake marked "Stake No. 2;" thence N. 78° 00′ E. 3,400 feet to a stake marked "Stake No. 3;" thence N. 12° 00′ W. 2,600 feet to a stake marked "Stake No. 4;" thence S. 78° 00′ W. 3,400 feet to Stake No. 1, the point of beginning. Area, 202.938 acres, more or less. The bearings are true.

*13. Delta* (Lat. 64° 20′ N.; long. 146° 50′ W.).—Beginning at a blazed tree on the bank of a slough of the Tanana River and marked "Stake No 1," which slough is within the limit of high-water mark of said river, following the meanderings of the bank of this slough in an easterly direction approximately 800 feet to a blazed tree marked "Stake No. 2;" thence S. 28° 00′ W. 5,280 feet to a blazed tree marked "Stake No. 3;" thence N. 62° 00′ W. 800 feet to a blazed tree marked "Stake No. 4;" thence N. 28° 00′ E. following the line of the eastern boundary of Delta City, 5,280 feet to Stake No. 1, the point of beginning. Area, 96.969 acres, more or less. The bearings are true.

*14. Richardson* (Lat. 64° 20′ N.; long. 146° 28′ W.).—Beginning at initial post marked "Stake No. 1," and which is situated on the north side of Second street in the village known as Richardson, Alaska, and about 28 feet west of the east line of the Hart-James Survey, and approximately 935 feet in an easterly direction from the crossing of Second street and the Banner Creek Trail; thence N. 68° 00′ W. 50 feet along the line of Second street to a post marked "Stake No. 2;" thence N. 22° 00′ E. 285 feet to a post marked "Stake No. 3;" and situated on the south line of the Alaskan Military Telegraph Line right of way; thence S. 68° 00′ E. 50 feet, following the south line of the said right of way to a post marked "Stake No. 4;" thence S. 22° 00′ W. 285 feet to initial Stake No. 1, the point of beginning. Area, 0.327 acre, more or less. The bearings are true. (General Orders, No. 90, 1908.)

By order dated May 16, 1908, the following was reserved, subject to private rights:

That tract of land included within metes and bounds as follows:

*Chena.*—Beginning at a stake 2″ x 4″ (Corner No. 1), located at the southeast corner of said tract, and also distant west 23.5 feet from corner of rese-

dence of H. A. Currier; thence north 200 feet to a similar stake (Corner No. 2), and also distant west 23.5 feet from the northwest corner of lot of H. A. Currier on First street; thence west 100 feet to a similar stake (Corner No. 3); thence south 200 feet to a similar stake (Corner No. 4); thence east, along Front street, 100 feet, to Corner No. 1, the point of beginning. Area, 20,000 square feet. The bearings are true. Lat. 64° 50′ N.; long. 148° 00′ W. (General Orders, No. 93, 1908.)

The reservations previously set apart are described in full in the reports of the Chief Signal Officer for 1906 and 1907.

### WIRELESS OPERATIONS.

In pursuance of the design to give Alaska a wireless telegraph system which would furnish an alternative to the wire lines for communication between the principal points, purchases have been made of material for 10-kilowatt stations at Nome and Fort Gibbon, and for 3-kilowatt stations at Fort Egbert, Fairbanks, and Circle City. The navy has undertaken the erection of a wireless station in Prince William Sound. There is already one naval station at Sitka. From previous experience in Alaska, it is hoped that by means of relays communication can be established between Nome and Sitka, and thence through the powerful station there to the United States direct. At each of the signal corps Alaskan stations named there is to be a structural steel tower of from 180 to 200 feet in height, and with the exception of Circle City excellent buildings are being erected for housing the apparatus and operators. The best apparatus procurable has been sent, and it is thought that before the winter season sets in the stations will be in working order.

### CONDITION OF ENLISTED MEN.

Although the past winter in Alaska was milder than the preceding one, causing less suffering generally on the part of the enlisted men, a few instances have been reported where they were compelled to undergo hardships in the performance of their duties connected with the maintenance of the telegraph lines. The health and conduct of the men has, as a rule, been good, although a few cases of typhoid fever developed during the year.

The increased pay now authorized for duty in Alaska is, it is believed, a just reward for this extreme service, and there is already noticeable a desire on the part of the men for this service.

### PHILIPPINE ISLANDS.

The military system of land lines, cables, and wireless stations in the Philippine Islands has been under the supervision of the chief signal officer, Philippines Division. The transfer of signal corps telegraph lines and cables to the insular government, in accordance with an agreement, the provisions of which were approved by the Secretary of War and the Philippine Commission, was completed on October 4, 1907. This transfer comprised 3,982 miles of land lines, 1,296 miles of cable, and property to the value of $734,954.42. Previous to the transfer of the cable system it was inspected and placed in good working condition. In conformity with the agreement mentioned above, the Signal Corps is to maintain a cable ship until October, 1909.

### TELEGRAPH AND CABLE SYSTEM.

The Signal Corps now operates 115 miles of military land lines, 9.6 miles of cable, and 24 offices. During the year the cable ship *Liscum* was engaged sixty-one days and ten hours in the repair and inspection of military cables, and subsequent to the completion of the transfer was employed thirty-seven days and fifteen hours in repairing insular government cables. On July 25, 1907, a cable was laid between Grande Island and Olongapo, and a telegraph office opened at the former station. Another cable was laid in Subic Bay between Grande Island and Macmanys Point on September 28, 1907, the combined length of these two cables being 9.6 statute miles. The interruptions to the Carigara-Catbalogan and the Capiz-Milagros cables were repaired by the cable crew of the *Liscum*, using for this purpose a launch and lighter. The cable ship has been in drydock since March 22, 1908, but will be available by the beginning of the next fiscal year.

From June 1, 1907, to May 31, 1908, the following messages were sent: Official business, 51,488; commercial business, 21,264; civil government business, 7,365; relayed, 226,604.

### TELEPHONE SYSTEMS.

Owing to the temporary nature of most of the garrisons in the Philippine Islands, the various post telephone systems installed were temporary in character, and they now require extensive rehabilitation. The systems at Iloilo, Jolo, and Zamboanga have already been entirely reconstructed, following standard practice. The installation at Parang, Mindanao, is in course of reconstruction, and a system will soon be installed at Camp Keithley, Mindanao. The telegraph line between Cotabato and Fort Pikit, Mindanao, is being converted into a metallic-circuit telephone line, and the grounded telephone circuit between Camp Overton and Camp Keithley is being changed into a metallic one.

The military telephone system in Manila has been maintained throughout the year with an average of 75 instruments connected to the exchange, the number of calls averaging 2.2 per day per instrument. The telephone exchange at Fort William McKinley is connected with Manila by two metallic trunk lines, one going to the military central and the other to the commercial exchange, giving the military system at Fort William McKinley the advantage of commercial service in the city of Manila.

### WIRELESS TELEGRAPHY.

The improvised station at the Cuartel de Infanteria was equipped as a regular station during the year, the transformer and various other parts of the apparatus having been manufactured in the signal corps shops, and the power for its operation obtained from the city lighting mains. This station has been utilized for training operators and communicating with Cavite and vessels and transports having wireless equipment. Four field wireless pack sets were sent to the Philippines for instruction purposes, and one of these sets was temporarily installed on the cable ship *Liscum*.

A wagon wireless set, received in the islands during March, 1908, was shipped to Malabang, Mindanao, and a temporary station was established to furnish communication with Zamboanga, the insular government cable between these points having been interrupted. This station is in successful operation, but transmits messages for the military establishment only, this limitation being necessarily placed on it on account of the fact that continued use of the apparatus might cause a breakdown, and there are no spare parts or opportunity for making repairs at such a distant station.

### ENLISTED MEN.

The health, performance of duty, and discipline of this command have been satisfactory, there being only 1 trial by general court-martial and 18 by summary court. The strength of the corps in the Philippines has varied from 211 men at the beginning of the fiscal year to 139 at the end. Ninety-seven men have been discharged in the islands, 25 of whom reenlisted; 28 were obtained by transfer from the line and 91 by transfer from the United States.

One hundred and sixteen men have been returned to the United States during the year—44 for duty, 2 for medical treatment, and 70 for discharge, while 1 man died. Of the 139 men in the islands at the end of this fiscal year, three out of every four have been there less than one year.

## CUBA.

### TELEPHONE SYSTEMS.

The telephone system, operating three switchboards and about 100 telephones in Marianao, Camp Columbia, and Habana, has given efficient service throughout the year. There are two trunk lines, metallic, between the Marianao and Habana boards, and one trunk line between the Columbia and Habana boards. The Habana board is connected by trunks to the central of the Red Telefonica, which is the commercial telephone company of Habana, and to the central of the Cuban government telephone system. All connections are exchanged with these systems without charge or accounting of any kind. The trunk lines above described were rebuilt by the Signal Corps, most of the material being furnished by the Cuban Government, during the months of February and March, 1908, and are at this time in most excellent condition.

Target range telephone installations were in use at each post where troops were stationed in the island of Cuba, and so far as known they rendered all the assistance in connection with target practice that was required or desired.

The following posts are equipped with telephone installations for the transaction of their local business: Camaguey, Cardenas, Cienfuegos, Constancia, Holguin, Matanzas, Pinar del Rio, Placetas, Sagua la Grande, Santiago de Cuba, and Santo Domingo.

### GUANTANAMO BAY INSTALLATION.

During the months of August and September the Signal Corps *constructed at Guantanamo* Bay a system of land lines and cables

connecting the following places: Cuban government telegraph station at Caimanera, naval wireless telegraph station, headquarters Guantanamo Navy-Yard, station ship *Monongahela*, Hospital Cay coaling station, navy target range at Deer Point, army reservation at Fisherman Point, light-house at Windward Point, and the battery at Conde Bluff. Owing to the temporary abandonment of that vicinity by the army, this installation has been turned over temporarily to the navy. While putting in this installation at Guantanamo Bay, the Signal Corps detachment assisted the navy by installing its target range telephone system at Deer Point.

### TELEGRAPHS.

Practically all of the land telegraph lines in the island of Cuba belong to the system operated by the Cuban Government under the director general of communications. This is the same system which was reconstructed and extended by the Signal Corps during the intervention beginning in 1898.

The Cuban government telegraph lines have given quite efficient service during the past year. There have been a good many interruptions on some of the lines, but they have been repaired very promptly. The excessive amount of rain at some seasons has made certain of the lines work very badly at times, necessitating the relaying of business at intermediate stations. At the beginning of the year signal corps operators were stationed at the following places: Caimanera, Camaguey, Camp Columbia, Ciego de Avila, Habana, Holguin, Marianao, Matanzas, Santa Clara, Santiago, Santo Domingo, Pinar del Rio, and Fisherman Point. Owing to reduction in the strength of the signal corps company, operators were withdrawn on April 27, 1908, from Matanzas and Holguin. Upon business connected with the administration of the Army of Cuban Pacification, 97,840 messages were handled during the year by signal corps operators.

### CUBAN GOVERNMENT WIRELESS SYSTEM.

Pursuant to directions of the commanding general, Army of Cuban Pacification, the chief signal officer of that army acted during the past year as adviser to the department of communications in connection with the installation of a system of wireless telegraph stations being installed by the Cuban Government throughout the island under contract. The following stations have been completed, inspected by the chief signal officer, Army of Cuban Pacification, and accepted by the Cuban Government: Pinar del Rio, 2½ kilowatt; Santa Clara, 5 kilowatt; Morro Castle, Habana, 10 kilowatt. In addition to these there is a 2½ kilowatt station at Nueva Gerona, Isle of Pines. Three stations are under construction, namely, Camaguey, 5 kilowatt; Santiago de Cuba, 10 kilowatt; and Baracoa, 5 kilowatt.

### UNITED STATES.

In addition to fire-control installations for coast defenses, military aeronautics, and electrical and other important experimental work, operations of the Signal Corps in the United States cover the management of military telegraph lines and establishment of post tele-

phone systems, the supplying of signal equipment to the army and the organized militia, the provision of fire-control and fire-direction systems for the field artillery, the enlisting and training of recruits in visual, electrical, and telephone work, and active and suitable preparations to bring the corps to a state of efficiency and preparedness for war or other emergency.

### SIGNAL CORPS POSTS.

Three posts, garrisoned exclusively by signal corps troops, were maintained during the year at Fort Wood, N. Y.; Fort Omaha, Nebr., and Benicia, Cal. A school of instruction for enlisted men, and a general depot of signal corps supplies and property have been maintained at each post. The post at Benicia Barracks was abandoned April 30, 1908, the storehouse being moved to Fort Mason, Cal., and the signal corps troops to the Presidio. The depots being located in the extreme eastern, middle west, and extreme western parts of the United States have proved very useful in the prompt distribution of signal-corps supplies.

During the year a first class 3-kilowatt wireless station was installed at the Fort Omaha post, and the construction of a large balloon house and hydrogen gas plant commenced. Upon the completion of the Omaha balloon plant during the present year, that post will become the principal aeronautical station of the Signal Corps. The completed gas-generating plant will permit the shipment of compressed hydrogen gas and enable the Signal Corps to engage in aeronautical work in the middle west, an undertaking which has heretofore been impossible due to lack of facilities for obtaining or transporting the proper supply of gas.

At the Fort Wood post special attention is paid to the training of men for duty in connection with fire-control work and submarine cables. This post is the home station of the cable boat *Cyrus W. Field*, which is constantly engaged in the installation and repair of submarine cables connected with the artillery fire-control systems of the Atlantic coast.

### ARMY SIGNAL SCHOOL.

During the year satisfactory reports have been received from the Army Signal School at Fort Leavenworth. Although the fundamental object of the institution is to train officers for the varied technical duties of the Signal Corps and to make research into all matters pertaining to military signaling, special attention is paid to the development of apparatus and organization necessary in the field duties of signal troops with the mobile army in the field.

The course of instruction is very practical, with only enough theory "to do the thing practically." The school includes a well equipped laboratory or workshop wherein much practical work is performed by the student officers during the winter months.

A field company of the Signal Corps properly organized and well equipped for field service is on duty with the school and has rendered excellent service in the maneuver problems and field exercises of the school. The field work of the school has developed valuable data *relative to* improvements in field equipment and done much to coordi*nate and systematize* the field duties of signal troops.

### SIGNALING AT WEST POINT.

Between March 30, 1908, and May 30, 1908, a detachment of 10 enlisted men were on duty at West Point where it gave demonstrations in the installation and operation of field lines, and assisted in the instruction of the cadets and enlisted men in electrical field signaling.

Concerning this duty, the acting superintendent stated on May 13, 1908:

> The value of the instruction given by this detachment can not be overestimated. It is felt here that the importance of this branch of art and science of war justifies a larger place in the curriculum.

### FIRE-CONTROL EQUIPMENT FOR FIELD ARTILLERY.

Probably no branch of the mobile army has a greater need for efficient electrical signaling equipment than the field artillery, due to the increasing use of indirect fire and the necessity for complete control for fire and direction when a number of batteries are operating together. Based on the plans outlined by the field-artillery board at Fort Riley, the Signal Corps now issues a standard fire-control equipment for batteries, battalions, and regiments of the field artillery.

During the year a new type of telephone, specially adapted to the needs of field artillery, has been devised and is now issued. The standard equipment has been issued to 32 batteries, 12 battalions, and 6 regimental organizations, and has given satisfactory results. During the year $11,000 has been expended on field artillery fire-control equipment.

### MILITARY DEPARTMENTS.

Under paragraph 1580, Army Regulations, department commanders are required to supplement the operations of the Signal Corps by such instruction in visual military signaling as they deem necessary for the public service. The instruction in the line of the army contemplates that each troop, battery, and company commander shall have at all times at least two available enlisted men able to exchange messages in the army and navy code at short distances by flag. As an aid thereto the Signal Corps distributes direct to each army organization a visual signaling outfit, consisting of two field glasses and two flag kits. About 75 per cent of the army has been equipped. The duties of signal officers at interior posts are now confined to only the necessary administrative work in connection with the maintenance of post telephone systems and telegraph lines.

Of the 9 departments in the United States it has been possible to supply only 5 throughout the year with a chief signal officer, viz, East, Gulf, Missouri, California, and Columbia. The duties of chief signal officer in the 4 other departments, viz, Lakes, Dakotas, Texas, and Colorado, were performed during the year by officers of the line of the army detailed as aids to department commanders.

The departments in which fire-control installations are in progress have been supplied with an officer of the Signal Corps as signal officer.

Special attention has been given to fire-control work, as stated elsewhere, in the Departments of the East, the Gulf, California, and the Columbia.

### SIGNAL CORPS OF THE ORGANIZED MILITIA.

The increasing need for efficient electrical field lines of information with armies of the field has been widely felt during the past year by the organized militia of the country, and many letters have been received from various organizations of the national guard relative to the field duties and equipment of signal troops. There is evinced a growing desire among the signal companies of the organized militia for standard organization and the electrical equipment necessary to install and operate field lines. These militia organizations are, in general, composed of professional men of technical ability, and the work of some of the companies at summer camps has been highly commendable.

The Signal Corps of the Army is desirous of cooperating with all militia signal organizations with the end in view of increasing the efficiency of both and of extending the usefulness of signal troops.

As shown in the last report of the War Department, signal organizations exist in the States of California, Colorado, Connecticut, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Rhode Island, Vermont, Texas, Utah, Washington, and the District of Columbia.

### WIRELESS TELEGRAPH WORK.

In addition to the four marine wireless sets for transport service furnished during the previous year, two other sets have been constructed in the past year and furnished for use on the transports *Kilpatrick* and *Sheridan*. Reports of the ranges attained by the first sets furnished have been very remarkable; one instance being where the transport *Thomas* was communicated with by the naval station at Sitka, Alaska, at a distance of about 2,300 miles. It is stated that there is always reasonable expectation of opening communication at a distance of 1,000 miles from shore.

The coast artillery stations at Forts Totten, H. G. Wright, Hancock, and Monroe have been completed during the year, and purchases are proceeding for the completion of a number of other stations. It has been found that these stations of 1-kilowatt power, in connection with stations of smaller power on the tugs towing targets, have been of the greatest value in expediting target practice.

The 3-kilowatt station at Fort Omaha has been completed, and is a model station in its equipment. The apparatus is installed in an excellent building near the base of a 180-foot steel tower. Fort Leavenworth and Fort Riley, Kans., have each been provided with portable 1-kilowatt sets, and arrangements have been concluded for the supply at the two latter stations of 3-kilowatt sets and steel towers similar to that at Fort Omaha.

### SIGNAL TROOPS IN MANEUVERS.

During the month of August, Company A, Signal Corps, participated in the summer maneuvers of the Iowa National Guard near Des Moines, Iowa. At these maneuvers, the "central station" system of umpiring was tried for the first time with troops of the organized militia. Trained umpires from the Army Staff College were in attendance, and the various umpires were kept in communication with the chief umpire by means of field lines provided by Company A, Signal Corps. The Chief Umpire was thereby kept in constant communication with all parts of the maneuver field and received simultaneous reports from both sides, enabling him to render decisions more quickly and efficiently.

Of the use of signal troops, the report of the chief umpire reads:

> This one feature of umpiring serves to call attention to the growing importance of the Signal Corps. Officers have scarcely begun to realize how the methods of handling troops in the field have changed, due to this new agency. Under old conditions battles of any magnitude, once begun, were fought out by individual impulses here and there, the will of the commander exercising no great influence on the result. Now his orders can be instantly transmitted to all parts of his command and the whole made responsive to his single will. The nation that makes the best use of this means of transmitting information will have a tremendous advantage over its less progressive adversary, and today the United States leads the world.

During the months of September and October excellent and original service was performed by a trained company of the Signal Corps in field artillery fire-control work at Fort Riley, Kans. During each day's firing, the company followed the commanding officer of the troops engaged with field lines and kept him constantly in communication with his battalion commanders, thereby enabling that officer to exercise complete control over fire and direction.

### MILITARY TELEGRAPH LINES IN THE UNITED STATES.

The following military telegraph lines were in operation at the end of the fiscal year:

| From— | To— | Length. | Messages handled. |
|---|---|---|---|
| | | *Miles.* | |
| Huachuca, Ariz | Lewis Springs | 19.0 | 2,612 |
| Fort Bayard, N. Mex | Bayard | 3.0 | (a) |
| Do | Silver City, N. Mex | 10.0 | (a) |
| Holbrook, Ariz | Fort Apache | 92.0 | 2,896 |
| Fort Myer, Va | Fort Washington, Md | 21.5 | 1,612 |
| Fort Clark, Tex | Spofford Junction | 9.5 | 1,715 |

[a] No report.

No lines were discontinued during the year.

There have been collected for transmission of commercial telegrams over military lines in the United States during the fiscal year tariffs amounting to $1,226.18. This amount has been deposited in the Treasury of the United States, as required by law. In addition thereto there has been collected and transferred to commercial companies the sum of $10,212.08, covering tariffs for messages transmitted by such companies over their lines; a total of 98,612 messages

were handled. This does not include the messages over the Alaska system, transferred to and from commercial companies at Seattle.

In addition to these lines, 57 military posts in the United States are connected by short branches or loops to commercial telegraph lines. These short lines are operated by enlisted men. These offices collect no "This line" tolls, and therefore render no line receipts.

### POST TELEPHONE SYSTEMS.

The sum of $12,910.65 was expended during the year in telephone construction and maintenance at interior posts, 55 posts now being provided with signal-corps systems. Nine of the larger posts have been equipped with permanent modern installations, with subterranean cables in conduit, while at the remainder of the posts aerial construction is still used.

Efficient telephone service is as essential in the transaction of public business as it is in the commercial world, and it is the policy of the Signal Corps to reconstruct the interior post telephone systems and install subterranean cables at all the larger permanent posts as rapidly as funds become available. The extent of funds available has rendered it imperative to limit the number of telephones at each interior post to an allowance prescribed in General Orders 97, War Department, 1907.

The telephone systems at coast artillery posts are considered part of the defenses and are provided from special fire-control funds.

### TARGET RANGES.

The standard target-range telephone systems with subterranean cable, provided for quick and efficient communication between firing points and targets, have given good satisfaction during the year. In the United States 57 posts have been provided with these standard systems. The remaining posts, having either very short or temporary ranges, have been provided with temporary aerial lines.

In addition to the standard telephone equipment mentioned above, the Signal Corps has designed an auxiliary system known as the "annunciator buzzer system" for increasing the efficiency of the standard target-range equipment. One of these systems has already been installed at Fort Niagara, N. Y. Additional sets for large and important ranges will be installed as soon as the necessary funds are available. During the year $2,600 has been expended on target-range installations.

### VISUAL SIGNALING.

Notwithstanding the increasing demand for electrical equipment for signaling and intercommunication, the Signal Corps has never underrated the value of visual signaling. It has continued to supply organizations with standard visual signaling outfits, consisting of two flag kits and two field glasses. This outfit has been issued to 634 organizations, consisting of companies of the engineer, signal corps, cavalry, infantry, artillery, and machine gun platoons.

Excellent reports have been received during the year concerning the two standard types of "day and night" field glasses issued by

the Signal Corps. The general properties of these field glasses, together with their low cost and serviceability, makes it a valuable part of the equipment furnished the army by the Signal Corps.

### SIGNAL CORPS MANUALS.

There has been an increasing demand during the year for copies of signal corps manuals. The manuals are enumerated below:

No. 2. Regulations for Military Telegraph Lines.
No. 3. Electrical Instruments and Equipments.
No. 4. Submarine Cables.
No. 6. Visual Signaling.
No. 7. General Regulations, Disbursing and Property.
No. 8. Fire Control Equipment.

The Chief Signal Officer of the Army distributes signal corps manuals only to the officers, enlisted men, and civilian employees of the Signal Corps. Other branches of the service are supplied by the second section of the General Staff when applications through military channels are referred approved.

### ESTIMATES.

Estimates for the Signal Corps are five in number: Clerical force, appropriated for in the legislative bill; signal service of the army, and Washington-Alaska military cable and telegraph system, appropriated for in the army bill; operation and maintenance of fire-control installations at coast defenses, appropriated for in the fortification bill; and military aeronautics, new.

The estimate for the clerical force is not increased. The signal service of the army is increased by the addition of estimates to cover post telephone systems at interior and coast artillery posts.

There is no increase in the estimate for operation and maintenance of fire-control installations.

The estimate for the Washington-Alaska military cable and telegraph system is decreased one-half.

### ENLISTED MEN.

The enlisted force, which aggregated 1,194 on June 30, 1908, has experienced the following changes: Enlisted and reenlisted, 641, of whom 334 were recruits; deserted, 47, being 3.9 per cent of the total force; died 5, 0.4 per cent; discharged for disability 14, 1.2 per cent; discharged by purchase 40, 3.4 per cent.

The difficulty experienced in former years in securing adequate enlistments for the Signal Corps has not this year been felt. Indeed, for more than half the past fiscal year the enlisted strength of the corps was kept up, practically, to the number authorized, and in many cases it was necessary to turn away, owing to the lack of vacancies, apparently intelligent and desirable recruits.

The grade of master signal electrician, with its increased pay, has, it is believed, operated to encourage the more desirable and ambitious men to remain in the corps with the ultimate hope of reaching that grade. As has been done in former years, promotions to the grades of master signal electrician and first-class sergeant are made only

after successful technical examinations, such examinations being open only to sergeant of the Signal Corps.

DISBURSING DIVISION.

The following statement shows the volume of the work handled during the fiscal year:

| | |
|---|---|
| Orders placed | 2,025 |
| Vouchers audited and paid | 3,210 |
| Transportation requests prepared | 1,010 |
| Letters and miscellaneous correspondence | 21,330 |
| Advertisements for proposals issued (about 8,310 copies being distributed) | 1,087 |
| Accounts current from officers handling Signal Corps funds, covering 13 appropriations, examined | 305 |
| Returns of Signal Corps property examined | 1,888 |

There was a large number of miscellaneous papers handled in connection with the items mentioned which are not included in this statement, it being impracticable to keep an accurate record of them.

The following shows the state and disposition of appropriations aggregating $1,222,302.17:

| Title of appropriations. | Disbursed by this office. | Transferred to other officers. | Balance unexpended. | Total. |
|---|---|---|---|---|
| 1. Signal service of the army, 1908 | $160,170.35 | $49,829.65 | ..... | $210,000.00 |
| 2. Washington-Alaska military cable and telegraph system | 112,315.91 | 42,815.70 | $34,868.39 | 190,000.00 |
| 3. Fire control at fortifications | 410,846.98 | 95,870.35 | 191,923.20 | 698,680.53 |
| 4. Fire control in insular possessions | 18,323.82 | ..... | 6,676.18 | 25,000.00 |
| 5. Coast artillery fire-control installations | 28.25 | ..... | ..... | 28.25 |
| 6. Board of Ordnance and Fortifications | 3,593.39 | ..... | 46,000.00 | 49,593.39 |
| 7. Encampment and maneuvers, organized militia, 1908 | 49,000.00 | ..... | ..... | 49,000.00 |
| Total | 754,318.70 | 188,515.70 | 279,467.77 | 1,222,302.17 |

ELECTRICAL DIVISION.

In addition to an increasing amount of routine work in providing electrical supplies and material for the Signal Corps and for the coast defense fire-control installations, the electrical division has constantly endeavored to continue during the year its investigation into all matters which would tend to simplify and improve the electrical apparatus of the Signal Corps.

In connection with the instrument shop, the division has planned and assembled wireless sets for the mobile army, for Alaska, and for army transports, all of which are giving satisfactory results. The new field set assembled in two small chests, for transportation by pack mule, promises to be the most efficient field set yet produced by the Signal Corps.

For the artillery districts, a new type of signal station has been evolved to meet the objections raised to the former two-story type. All district artillery engineers have been placed on the mailing list for engineer circulars, and each one furnished with a file of signal corps drawings and specifications. There has been instituted during the year the practice of sending each month to the coast artillery and signal officers concerned a progress map showing the rate of progress

made at each post during each month since the commencement of the work. The progress maps furnish each officer in charge of such work with a knowledge of just what is being accomplished under similar conditions in other districts, and by comparisons furnish an incentive for greater effort.

During the year about 4,000 negatives illustrative of events and places connected with the campaigns of the Spanish-American war, Philippine insurrection, and China relief expedition have been collected, from which prints have been made, mounted, and indexed, the collection making an interesting and valuable record of work of the Signal Corps as well as of the general life of the army during the operations mentioned.

### TELEGRAPH DIVISION.

The telegraph division receives all reports concerning the telephone systems at interior posts, the operation of the general telegraph and cable service of the army, and the efficiency of signaling apparatus and equipment furnished the line of the army, excluding fire-control equipment for the coast defenses. This division endeavors to keep in touch with the line of the army and to cooperate with it in increasing the efficiency of signaling apparatus. The division receives and acts upon all requisitions for supplies purchased from signal-service appropriations. Daily reports are received showing the property in stock at the various general supply depots, and the division is thus able to distribute the approved requisitions in the interests of economy.

### LABORATORY AND INSTRUMENT SHOP.

The laboratory, while originally established for the purpose of making commercial tests in connection with the purchase of supplies, has through force of circumstances been given over very greatly to the fabrication of special apparatus which it has been found impractical to have manufactured commercially. The work of the laboratory during the period of development of the fire-control apparatus proved an invaluable asset in quickly determining the suitability of hundreds of new devices which had to be made up to fit peculiar conditions. With a very small number of employees (one instrument maker, one electrical assistant, one carpenter and packer, and two skilled laborers) it is believed that the volume of work done has been very exceptional.

In the past two years special attention has been given to devising wireless telegraph apparatus, it having been found impractical to secure commercially in this country any portable wireless telegraph apparatus which was at all suited to field conditions. In addition to the portable apparatus devised, 45 sets have been assembled and shipped from the laboratory during the past fifteen months. Other special constructions have been the fabrication of complete artificial line equipment for duplexing the Sitka-Valdez cable, wireless apparatus for a number of coast artillery and Alaskan stations, and wireless telegraph apparatus for transports.

It would be difficult to estimate the money value of the work which the laboratory has been able to accomplish, and it is believed that it has returned many times over to the Government its cost to the Signal Corps.

## III. STANDARD FIRE-CONTROL INSTALLATIONS FOR COAST DEFENSE.

In addition to the field work of the Signal Corps in the installation of apparatus in the various artillery districts during the year, considerable experimental work has been carried on in connection with the perfection of standard fire-control apparatus and the development of new equipment. In general the aim of such work has been to secure ideal operation and simplified design of circuits with reduced cost rather than to introduce radical changes in the present types of equipment.

An important change has been made during the year in the method of conducting the installation of standard fire-control systems by the organization of a board of officers in each artillery district in which this work is in progress.

These boards are composed of the representatives of the engineer, artillery, and signal corps, and are generally known as local fire-control boards. The functions of these boards are to consider the special adaptations of standard or typical fire-control schemes to meet the peculiar local conditions obtaining at each post. This board makes recommendations for such changes in the instruments, electrical connections, or operating requirements as in its judgment are desirable. The services of these boards have been of much value in securing prompt and efficient coordination of the work of the interested corps.

A brief outline of the year's work is given below:

### (1) ARTILLERY DISTRICT OF PORTLAND.

During the year much work has been done at Forts Williams, McKinley, Levett, and Lyon, and the installations at those forts are nearing completion. The work of the Signal Corps at Peaks Island and Long Island is under way.

### (2) ARTILLERY DISTRICT OF BOSTON.

The standard fire-control installations at Fort Banks, Fort Andrews, Fort Standish, Strawberry Hill, Fort Strong, and Nahant were completed during the year and transferred to the Artillery Corps. The work at Point Allerton and Deer Island was near completion at the close of the fiscal year.

### (3) ARTILLERY DISTRICT OF PUGET SOUND.

At the close of the fiscal year the standard installations at Forts Worden and Flagler were nearing completion, while that at Fort Casey was about half completed.

### (4) ARTILLERY DISTRICT OF SAN FRANCISCO.

Active operations have commenced on the installation of the fire-control system for this district. The preliminary engineering has largely been completed and much of the equipment delivered. Conditions are favorable for making rapid progress with this large and important work.

#### (5) IN OTHER ARTILLERY DISTRICTS.

The signal-corps installations in the standard systems at Forts Wadsworth and Hamilton, which were completed in 1906, have continued to give satisfactory results during the present year. During the year the post telephone systems at Forts Wadsworth and Hamilton were completed and transferred to the Artillery Corps.

The fire-control installation at Fort Morgan and the mine-fire installations at Forts Taylor, Pickens, Dade, Moultrie, Screven, Fremont, and Caswell are rapidly approaching completion. These systems are provisional in character.

Plans for the standard installations at the posts in the artillery district of the Columbia have been approved, and material is being shipped to those points.

#### (6) INSULAR INSTALLATIONS.

Plans for the signal-corps portions of the fire-control systems for Manila Bay and Hawaii have been approved, and material is being shipped to those points.

#### CABLE SHIP FOR FIRE-CONTROL WORK.

The past fiscal year has clearly demonstrated the imperative need for at least two cable ships for service on the Atlantic coast. In many cases submarine cables have been out of service for periods of several months, due to the large amount of work devolving upon the single vessel available for making repairs. It is anticipated that, with the addition of the cable ship now under construction, these conditions will be much improved. Repairs have also been delayed in some instances, due to the necessity for placing orders for cable to be used in making repairs. This will be obviated in the future by providing in each artillery district reserve lengths of cable which will be available at all times.

During the past year the cable boat has laid 18 new cables, repaired 28 interruptions, and recovered 7 cables which had been discontinued. There is now in commission slightly more than 2,000 conductor miles in 212 linear miles of submarine cable, largely in the Department of the East.

## IV. WIRELESS TELEGRAPHY AND TELEPHONY.

#### WIRELESS TELEGRAPHY.

During the past few years the Signal Corps has given considerable attention to the development of suitable apparatus for the operation of wireless telegraphy, both for fixed stations and for use of the mobile army. This work has reached a point at present where suitable portable apparatus, including antennæ, has been standardized and issued in considerable quantities to the service schools, the recently organized field companies of signal troops, and to certain points for the use of coast artillery troops in connection with coast defense.

To summarize, the following table exhibits the classification and distribution of these stations at present:

*Signal Corps wireless telegraph stations.*

| Station. | Power. | Height of mast. | Call. | Station. | Power. | Height of mast. | Call. |
|---|---|---|---|---|---|---|---|
| | *Kilowatt.* | *Feet.* | | | *Kilowatt.* | *Feet.* | |
| Fort H. G. Wright, N. Y. | 1 | 150 | FW | St. Michael, Alaska | 3 | 200 | FM |
| Fort Totten, N. Y. | ½ | 125 | FT | Petersburg, Alaska | 1 | 100 | FP |
| Fort Wood, N. Y. | 3 | 150 | FD | Wrangell, Alaska | 1 | 100 | FW |
| Fort Hancock, N. J. | 1 | 117 | FN | Camp Columbia, Cuba | 1 | 110 | SO |
| Fort Omaha, Nebr. | 3 | 175 | FN | Zamboanga, P. I. | 3 | 175 | FM |
| Fort Leavenworth, Kans. | 1 | 90 | FL | Jolo, P. I. | 3 | 175 | FS |
| Nome, Alaska | 10 | 200 | FD | Transport Logan | 3 | ..... | ATL |
| Fort Gibbon, Alaska | 10 | 200 | FG | Transport Sherman | 3 | ..... | ATR |
| Fairbanks, Alaska | 3 | 175 | FB | Transport Thomas | 3 | ..... | ATU |
| Circle City, Alaska | 3 | 175 | FK | Transport Sheridan | 3 | ..... | ATS |
| Fort Egbert, Alaska | 3 | 200 | FQ | Transport Kilpatrick | 3 | ..... | ATK |

The 1-kilowatt sets at Fort Leavenworth and Camp Columbia are wagon sets. In addition, there are field pack sets at the Artillery School, Fort Monroe, Va., and the Army Signal School, Fort Leavenworth, Kans.

The wireless telegraph equipments developed by the Signal Corps, with their type, kilowatt capacity, and power equipment, are as follows: Two-cabinet style pack set (now obsolete), one-eighth; storage battery, gasoline engine, direct-current generator, hand generator. Trunk type pack set, one-eighth; storage battery, gasoline engine, direct-current generator, hand generator. Wagon set, 1; gasoline engine and alternating-current generator, belted. District signal station set, 1; alternating-current motor generator. Station set, Fort Wood, 3; alternating-current motor generator and belted engine set. Marine set, 3; alternating-current motor generator. Alaskan Signal Corps, 3; alternating-current generator belted to gasoline engine. Alaskan Massie, 10; alternating-current generator belted to gas engine.

Each field company has been issued equipment for two complete portable stations, which can be installed ready for operation in a very few minutes. The experience thus far in the utilization of portable wireless sets for the mobile army clearly indicates that, whereas the sets are extremely valuable at times, the main reliance for the service of lines of information between the larger units of a command must be upon the field buzzer lines which have been developed to a point where they are so mobile and reliable in operation as to inspire the confidence of the line of the army which they are designed to serve.

### NEW ALASKAN WIRELESS INSTALLATIONS.

The most important wireless undertaking during the current year has been the construction and installation of a chain of stations along the Yukon River in Alaska. This work was inaugurated in January and carried forward simultaneously, so that the shipments could be made in a manner permitting all of the stations to go up at

the same time and to be finished, if possible, in the very short working season available in that Territory. The task included the design and construction of permanent and commodious houses for each of these stations, capable of accommodating duplicate generating apparatus for each plant, and serving also as an operating room and living quarters for the signal corps detachment on duty as operators. The antennæ for these stations are to be supported from steel towers constructed in the United States and shipped in parts to Alaska, there to be erected, and are of the umbrella type, which has been found most efficient for this purpose.

This series of stations comprises the following: A new 10-kilowatt station at Nome, a 10-kilowatt station at Fort Gibbon, and 3-kilowatt stations at Fairbanks, Circle, and Fort Egbert. The steel towers for the stations at Fairbanks and Circle had been erected the previous year, and all of the other construction and the installation of the apparatus is now nearing completion as a part of the work of the present season.

In conjunction with this series of stations down the Yukon River the Signal Corps of the Army, in cooperation with the Navy Department, proposes to provide a complete chain of wireless stations leading from the mainland of the United States to Nome, on Norton Sound. To this end the Navy Department is at present constructing a high-power station near Valdez, Alaska, which when completed should be able to connect with the Signal Corps stations at Fort Egbert, Circle, Fairbanks, and Fort Gibbon on the north and with the large naval station at Sitka on the south, and from thence to the naval station at Tatoosh Island, off the coast of the State of Washington.

This wireless undertaking is far-reaching in its ultimate results and will furnish a complete telegraph system reaching the principal points in Alaska, thus duplicating the present land line and cable system, so that the chances of interruption which are now dependent upon a single cable and telegraph line will be very materially reduced and the certainty of communication at all seasons to the interior of Alaska assured. In addition to the main object of this wireless system, its completion will also enable certain readjustments of the land telegraph system heretofore employed which will very materially reduce the burden of maintenance through the long winter season on certain portions of the line.

### WIRELESS TELEPHONY.

During the year progress in wireless telephony has reached a point where its adaptability to the uses of the army must be seriously considered. Through an allotment from the Board of Ordnance and Fortification this office has purchased one complete set of wireless-telephone apparatus, which has been installed at Fort Monroe, Va., and is now being tested under the supervision of the artillery school authorities.

From a theoretical standpoint it appears that the ultimate possibilities of wireless telephony are encouraging, and this office is at present considering plans for experimenting on this subject with a view of reducing the cost of the apparatus and increasing its efficiency.

### NEED OF GOVERNMENT CONTROL OF WIRELESS TELEGRAPHY.

Wireless telegraphy, from a government standpoint, particularly along the coast line, is in a state of great confusion, due to the lack of proper regulations governing the interference of different private companies and the government stations. At present there is no definite regulation which prevents any commercial concern from maliciously operating its wireless plant to the confusion of the other stations within its range. The technical methods employed to prevent interference are not at present required by law, and the rapid increase in the number of stations has resulted in practically placing at the mercy of commercial concerns the operation of the government plants connected with the standard fire-control systems of the coast defenses.

It is evident that some form of government control is absolutely necessary in order to conserve the interests of the Government as well as of private parties.

## V. MILITARY AERONAUTICS.

The past year has proved an epoch-making one in the progress of practical aeronautics, while at the present moment results are being obtained so rapidly as to convince any serious mind that the age of mechanical flight is finally at hand.

### CURRENT EVENTS.

*St. Louis races.*—The balloon detachment of the Signal Corps, consisting of ten enlisted men, was on duty at the international balloon races in St. Louis in October, 1907. Their assistance was of great value to those in charge of the races; the knowledge that the men obtained was of great value to the Signal Corps.

An officer of the Signal Corps was in one of the balloons and landed a short distance from this city, covering the distance of 726 miles from St. Louis in thirty-nine and one-half hours.

*Investigations abroad.*—An officer of the Signal Corps spent three months in France, England, Germany, and Belgium last fall inspecting and investigating the military aeronautical establishments of these countries.

*Free ascensions.*—A number of free ascensions have been made from Washington, D. C. These were utilized for experimenting with wireless telegraphy, with balloon photography, and for training the personnel of the balloon detachment. Wireless messages were successfully received in the balloon car from various altitudes between 300 and 3,000 feet from the wireless stations at both the navy-yard, Washington, D. C., and Annapolis, Md. It was proven conclusively that wireless messages can be received in the car of a free balloon.

*Spherical balloons.*—Two new spherical balloons of 540 cubic meters and 1,000 cubic meters capacity have recently been contracted for; the smaller one for captive balloon work and the other for free ascensions.

*Contracts for dirigible balloons and aeroplanes.*—The Signal Corps has been instrumental in materially advancing the progress of aerial

navigation by the encouragement it has given the owners and inventors of dirigible balloons and aeroplanes.

In January specifications were prepared in this office and proposals invited for a dirigible balloon capable of carrying two persons and designed to have a speed of 20 miles per hour. A bonus was offered for additionl speed up to 24 miles and a deduction from the contract price for speeds under 20 miles an hour. Below 16 miles, the machine to be rejected. An endurance test of two hours was prescribed, during which time the machine was to make 70 per cent of its maximum speed. The instruction of two men in handling and operating the airship was included in the contract price. Thirteen bids were received in answer to these specifications and the contract was awarded to Mr. Thomas S. Baldwin, of New York City, who is to deliver his airship at Fort Myer, Va., by July 27. He is given one month after delivery in which to fulfill the requirements of the specifications.

In December specifications were sent out covering the purchase of a heavier-than-air flying machine. In this case the speed was fixed at 40 miles an hour. An endurance test of one hour was prescribed, during which time the machine was required to remain continuously in the air without landing; to be steered in all directions without difficulty and at all times under control and equilibrium. This machine was also required to carry two persons and the purchase price was to include the instruction of two men in its handling and operation. Twenty-four bids were received and contracts were awarded to two of the bidders, Mr. A. M. Herring, of New York City, and the Wright Brothers, of Dayton, Ohio. Mr. Herring has until August 13, and the Wright Brothers until August 28 to deliver their respective machines at Fort Myer, Va. A month will be allowed in which to complete the trials.

The requirements were made severe in both the dirigible and aeroplane. As a result, inventors are spurred on to produce machines which are in advance of anything yet made; at the same time the Government will not have to purchase an experimental and useless device, but will secure equipment of immediate and real military value.

*Tent or hangar.*—A tent 110 feet long has been ordered which is to house the dirigible balloon and aeroplanes at maneuvers or wherever it may be decided to use them.

*Captive-balloon park.*—The captive balloon, which up to within a few years was the only practical one for military purposes, still holds an important place as a portable means of observation. Plans have been prepared for a field captive-balloon park consisting of the necessary special type vehicles for carrying the balloon, hydrogen tubes from which to fill it, and power winch for raising and lowering it on its cable.

The important question of supplying hydrogen gas in the field has been settled after careful consideration by providing steel tubes in which the gas is compressed to a high degree at the source of supply. These tubes can then be transported into the field by rail and by the special type of wagons mentioned above. Three hundred and sixty-eight of these cylinders are now on hand; steps are being taken to increase this number so that it will be possible to supply hydrogen anywhere and in any desired quantity.

*Balloon plant at Fort Omaha.*—In anticipation of taking up the subject of aeronautics on a scale commensurate with its importance, a complete plant is being constructed at Fort Omaha, Nebr. This plant comprises a steel balloon house 200 feet long, 84 feet wide, and 75 feet high; that is, large enough to house a dirigible balloon the size of the new French military airship *Le Republique*. For furnishing hydrogen gas, an electrolytic plant is being set up capable of furnishing 3,000 cubic feet per hour. A gasometer of 50,000 cubic feet is being provided to store a sufficient amount for emergencies. In connection with the hydrogen plant is a compressor for charging the steel tubes referred to above when it is desired to ship hydrogen to other points. A hydraulic pump for testing steel tubes at high pressure is a part of this equipment. A wireless-telegraph tower 200 feet high has been completed and will probably be used in connection with wireless experiments for balloons. This Fort Omaha plant will be completed about October 1, 1908.

## DEVELOPMENT OF MILITARY AIR SHIPS ABROAD.

In the development of aerial navigation, two distinct general types of machines are being constructed, namely, the dirigible balloon, which consists essentially of a gas bag supporting a suitable car, comprising power to drive it through the air; and, secondly, all those other forms of machines which possess no gas bag, but depend for suspension upon the dynamic reaction of the atmosphere. The machines of the latter class are heavier than air.

France, Germany, and England have, in the past few years, displayed unusual activity and interest in the development of airships for military purposes.

*France.*—France has just received from the builders her fourth large air ship, *La Republique*. Her predecessor, *Le Patrie*, 198 feet long, greatest diameter 34 feet, engines 70 horsepower, and capable of a maximum speed of 34 miles an hour, made 174 miles from Paris to its station on the German frontier in about seven hours. Another French dirigible, the *Ville de Paris*, has a length of 203 feet, greatest diameter 34 feet, engines 70 horsepower. It has made a successful flight of 140 miles and made a speed of 26 miles per hour. This air ship was taken over by the French army for station at Verdun in place of *Le Patrie*, which was lost.

*England.*—The British army constructed, from very limited funds, a small dirigible known as *Military Dirigible No. 1*. It has made successful flights. As a result of the preliminary experiments the aeronautical department now has under construction at Aldershot *Military Dirigible No. 2*, having engines of 100 horsepower and designed for a speed of 40 miles per hour. It will carry 6 passengers. Experiments with heavier-than-air flying machines are being conducted by the aeronautical corps.

*Germany.*—The aeronautical corps of the German army has just put into operation its second dirigible balloon. Two others are operated under government patronage, the *Parseval* and the *Zeppelin*. The latter has a length of 446 feet, diameter 42½ feet, two engines of 110 horsepower each, and has completed within a few days a 250-mile trip lasting twelve hours, on which it went over the Alps from Lake Constance to Zurich and Lake Lucerne and back to the

starting point, carrying 12 persons. It is now preparing for a twenty-four-hour endurance test, on which a run is to be made from Lake Constance to Mainz and return.

*Russia.*—The Russian army is now taking steps to construct several dirigible balloons of the *Patrie* type. Their present estimates contemplate the construction of a fleet of four dirigibles of that size and type.

*Belgium.*—Reports indicate that the Belgian army has contracted recently with an aeronautical constructor in Paris to furnish a high-speed military dirigible.

*Italy.*—Reports indicate that the aeronautical department of the Italian army is experimenting with a high-speed military dirigible balloon.

### ACTION OF THE HAGUE PEACE CONFERENCE.

The following is the declaration signed by the delegates of the United States to the Second International Peace Conference held at The Hague June 15 to October 18, 1907, prohibiting the discharge of projectiles and explosives from balloons, ratified March 10, 1908:

The undersigned, plenipotentiaries of the powers invited to the Second International Peace Conference at The Hague, duly authorized to that effect by their Governments, inspired by the sentiments which found expression in the declaration of St. Petersburg of the 29th of November (11th of December), 1868, and being desirous of renewing the declaration of The Hague of the 29th of July, 1899, which has now expired,

Declare:

The contracting powers agree to prohibit, for a period extending to the close of the Third Peace Conference, the discharge of projectiles and explosives from balloons or by any other new methods of a similar nature.

The present declaration is only binding on the contracting powers in case of war between two or more of them.

It shall cease to be binding from the time when, in a war between the contracting powers, one of the belligerents is joined by a noncontracting power.

The present declaration shall be ratified as soon as possible.

The ratifications shall be deposited at The Hague.

A procès-verbal shall be drawn up recording the receipt of the ratifications, of which a duly certified copy shall be sent, through the diplomatic channel, to all the contracting powers.

Nonsignatory powers may adhere to the present declaration. To do so, they must make known their adhesion to the contracting powers by means of a written notification, addressed to the Netherlands Government, and communicated by it to all the other contracting powers.

In the event of one of the high contracting parties denouncing the present declaration, such denunciation shall not take effect until a year after the notification made in writing to the Netherlands Government, and forthwith communicated by it to all the other contracting powers.

This denunciation shall only have effect in regard to the notifying power.

In faith whereof the plenipotentiaries have appended their signatures to the present declaration.

Done at the Hague, the 18th October, 1907, in a single copy, which shall remain deposited in the archives of the Netherlands Government, and duly certified copies of which shall be sent through the diplomatic channel to the contracting powers.

The countries which did not sign the declaration forbidding the launching of projectiles or explosives from balloons were: Germany, Austria-Hungary, China, Denmark, Ecuador, Spain, France, Great Britain, Guatemala, Italy, Japan, Mexico, Montenegro, Nicaragua, Paraguay, Roumania, Russia, Servia, Sweden, Switzerland, Turkey, Venezuela.

As an evidence of the attention which is now being given by foreign armies to the subject of military aeronautics, a schedule of troops at present used exclusively for aeronautical work by the principal foreign powers follows:

*Balloon troops.*

| | Peace. | | War. | | Student classes. | | |
|---|---|---|---|---|---|---|---|
| | Officers. | Men. | Officers. | Men. | Months each year. | Officers. | Men. |
| England (1 company; factory and school at Aldershot) | 5 | 40 | 20 | 306 | ..... | 15 | ..... |
| France (battalion of 4 companies; factory and experimental station at Meudon) | 24 | 432 | ..... | ..... | ..... | ..... | ..... |
| Germany (battalion of 3 companies; headquarters and school at Tegel) | 20 | 465 | ..... | ..... | ..... | 20 | ..... |
| Russia (3 battalions) | 79 | 3,255 | 79 | 3,255 | 8 | ..... | ..... |
| Italy | 5 | 80 | 22 | 628 | ..... | ..... | ..... |
| Austria | 15 | 186 | ..... | ..... | 6 | 20 | 320 |
| Spain | 9 | 104 | ..... | ..... | ..... | ..... | ..... |

The United States has at present a force of 3 officers and 10 enlisted men to compare with the above figures.

With the approval of the Secretary of War, an estimate for $200,000 was submitted to Congress at its last session to make a beginning in the subject of the proper aeronautical equipment and instruction for the American army. This appropriation, however, failed to be authorized, which fact placed this office at a disadvantage at a critical time. The Board of Ordnance and Fortification, however, has taken up this subject, and from the limited appropriation available for that board has allotted the funds, which made it possible to enter into contracts for the purchase of one each of the Wright Brothers and Herring aeroplanes. Progress in aeronautics has been rapid in the past few months and may be expected to be more so in the near future. The Wright Brothers have not as yet given a public demonstration of their aeroplane. In October, 1906, Santos Dumont made the first public flight, a bound of a few yards. The following year Farman, a French aeronaut, increased this to a couple of hundred yards; then in January made 1 mile, returning to the starting point. Since then he has progressively increased this distance to 8 miles, time in the air about twenty minutes.

A single modern battle ship of the *Connecticut* type costs approximately $8,000,000, and the present naval policy of gradually increasing the number of battle ships is strictly in accord with the present needs of the nation. To enable the Signal Corps of the Army to initiate and develop an aeronautical service for the army, an estimate will be submitted to Congress at its coming session for a sum which will enable the Signal Corps to take up this rapidly rising military auxiliary in a manner commensurate with its intrinsic importance and worthy of the present prominence of the nation.

Very respectfully,

JAMES ALLEN,
*Brigadier-General,*
*Chief Signal Officer of the Army.*

*The* SECRETARY OF WAR.

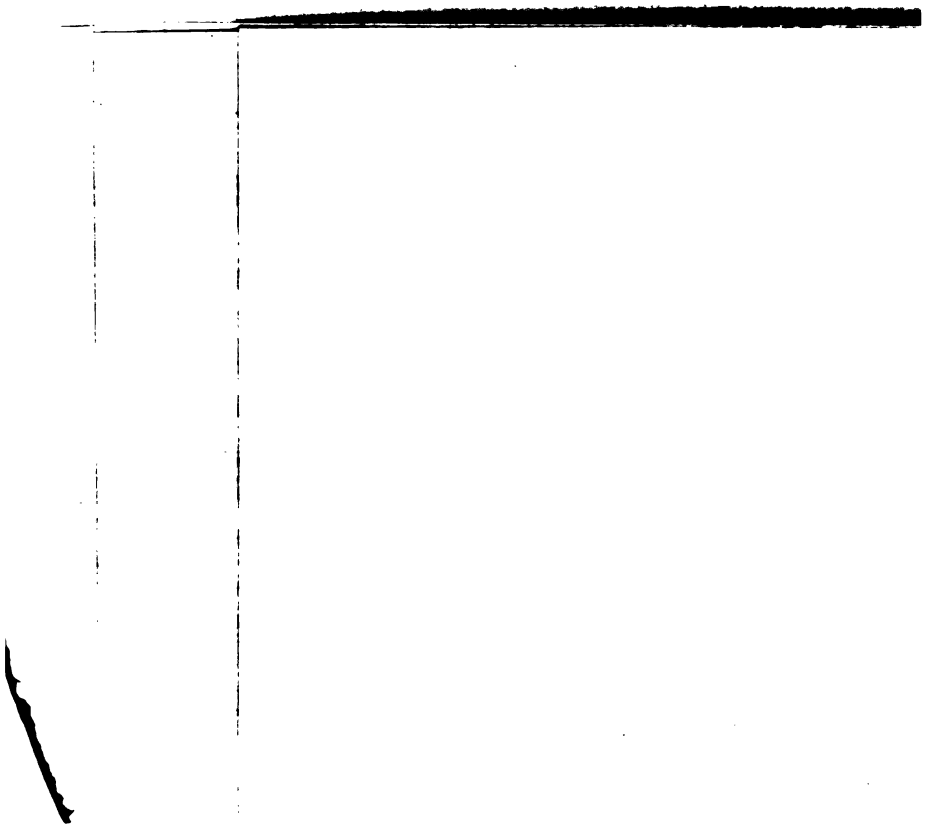
## NOTE.

WAR DEPARTMENT,
SIGNAL OFFICE,
*Washington, October 31, 1908.*

Since the completion of this report the entire chain of wireless telegraph stations under installation in Alaska has been successfully completed and is at present handling commercial traffic.

In military aeronautics, the contract for the purchase of one dirigible balloon has been fulfilled, and the balloon tested and accepted, and is at present used for the training of officers and men. The contract with the Wright Brothers for a heavier-than-air flying machine has not yet been completely fulfilled, due to the deplorable accident that resulted in the death of Lieut. Thomas E. Selfridge, First Field Artillery, attached to the Signal Corps, and the serious injury of Mr. Orville Wright, of Dayton, Ohio, on September 17, 1908. The preliminary tests of the aeroplane at Fort Myer, Va., have publicly demonstrated, however, the practicability of mechanical flight.

J. A.



# REPORT OF THE CHIEF OF COAST ARTILLERY.

# REPORT OF THE CHIEF OF COAST ARTILLERY.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF COAST ARTILLERY,
*Washington, October 3, 1908.*

SIR: In accordance with the requirements of Army Regulations, which make it the duty of the Chief of Artillery to advise the War Department of the efficiency of the personnel and material of the artillery, and to make such recommendations in reference thereto as shall tend to promote the efficiency of this arm of the service, I have the honor to submit the following report.

The separation of the coast and field artillery, as provided by the act of January 25, 1907, was completed on July 1, 1908, when the Chief of Artillery ceased to exercise supervision over the latter branch, and his title became Chief of Coast Artillery.

## THE COAST ARTILLERY.

### ORGANIZATION AND ADMINISTRATION.

Corps organization.

It was stated in the report of the Chief of Artillery for 1907 that the corps organization, with varying company strength, is suited to the needs of the coast artillery; that the proportion of field officers is well adapted to the present requirements, and that the establishment of artillery districts, with their commanders, has greatly promoted efficiency. All of this is reiterated as a result of experience during the past year. A serious drawback, however, still exists in that the coast artillery, organized as a separate corps, separate in purpose, and separate in training and supply from the mobile army, is still linked to it by being combined with troops of the mobile army in territorial departments commanded by officers who, with rare exceptions, are appointed from the mobile branches.

The anomaly of this situation is set forth at length in the following extracts from my report of last year, to which attention is invited:

> With regard to the higher administration of coast artillery, however, an anomaly in military administration is still considered to exist, for while the coast and the field artillery have been completely separated, except as to a common chief, temporarily, and while the coast artillery has been organized by law into a separate corps, and thereby, in the eye of the law, practically separated from all troops of the mobile army, it is still linked to the cavalry,

infantry, and field artillery through the fact that, under existing arrangements, territorial administrative departments are organized in which both field army troops and coast artillery troops are grouped together for administrative purposes under the command of the same general officer.

The general officers who command and who have commanded the coast-bordering territorial departments have been appointed, with very rare exceptions, from the cavalry and infantry, and have had no previous training in the handling or administration of coast artillery troops. As a consequence, in such cases they can have no adequate knowledge of either the tactical or administrative needs of this arm. Under such conditions the interests of the coast artillery, and, therefore, those of the United States must suffer in all matters of coast artillery technique which bear on coast artillery material and its use. So long as this anomaly continues to exist, just so long, it is considered, the coast artillery will be lacking in that efficiency which rests on an adequate and proper installation of coast artillery material and the highest possible development of training of the personnel assigned to its service; it will be lacking, in short, in that standard of efficiency that would be possible were the administrative head of the territorial department educated and trained technically in his earlier years in all of the details of the means and methods of modern coast defense.

A clear distinction should be drawn between a territorial military department composed solely of infantry, cavalry, and field artillery and one composed solely of coast artillery troops, in that the former is an administrative unit applicable normally to peace conditions only, and is abandoned in war, whereas the latter is a coast defense administrative unit that would continue to exist in war the same as in peace. At the outbreak of war the infantry, cavalry, and field artillery are withdrawn from their peace stations and mobilized into the brigades, divisions, and corps of the field army for duty in connection with the land operations of the field army. On the other hand, the coast artillery at the outbreak of war with any maritime power will simply continue the functions practiced during peace without any change of locality.

The coast defenders are permanently located along the coast and can not be taken from the coast fortifications until all danger of naval attack on coast cities and shipping has disappeared as a result of a decisive victory of our fleet over that of the enemy. All administrative functions pertaining to the territorial department must, therefore, continue in full force for coast artillery during war. It is, in fact, precisely at such a time that coast artillery equipment and personnel must be maintained at their highest efficiency since the coast line immediately becomes the threatened line of attack. This requires careful inspection by general officers who know how to examine in person minutely into the details of installation and drill and who are able to pass upon the condition of all coast-defense material in a practical way and upon the standard of the drill of the personnel. Only through such inspections by such trained general officers will it be possible to insure an efficient defense by the coast artillery. It goes without saying, indeed, that general officers who have spent their professional life with infantry, cavalry, or field artillery can not properly make such inspections as are here indicated, either during peace or war. They lack the knowledge and experience to know what conditions should obtain both as to means and methods.

The scheme now followed by the War Department regarding territorial departments contemplates discontinuing these departments at the outbreak of war, or at least making such a modification of department lines and commanders as to upset or confuse coast artillery administrative functions at the very time when coast artillery troops are most likely to be engaged with the enemy.

If coast artillery departments were organized and placed under the command of general officers appointed from the coast artillery, there would be no change in administrative methods or in artillery department commanders at the outbreak of war, and coast-defense preparations could proceed with unity of direction and with the highest possible efficiency of administrative control. In the best interests of the United States I feel I can not too urgently recommend the creation of coast-defense departments and the assignment of general officers appointed from the coast artillery to the command thereof. This matter has already, both verbally and in writing, been brought to the attention of the War Department, and as it requires no legislation to put the recommendation into effect, it is hoped that War Department orders may be issued providing therefor.

With a view to correcting this anomaly, and to placing the coast defenses upon a proper basis of administration for peace and war, I again most urgently renew my recommendations, as follows:

Coast artillery departments.

(*a*) That the coast artillery be organized for command and administration as a separate territorial division of the army, composed of three territorial departments.

(*b*) That the coast artillery be increased by three brigadier generals of coast artillery, whose duty shall be to command the coast artillery departments.

(*c*) That the Chief of Coast Artillery be made a major-general and placed in command of the coast artillery division.

(*d*) That all annual estimates for the installation and maintenance of the coast defenses and for the administration and maintenance of coast artillery troops, and all accounts and expenses incident thereto, be kept separate from those of the mobile army in so far as is practicable.

The above recommendations with regard to organizing coast artillery departments, to making estimates, and to keeping accounts, can be put into effect by a War Department order, but those with regard to the organization of the coast artillery division and to the apointment of coast artillery general officers require legislation.

Recommendations.

I therefore recommend—

(*a*) That a War Department order be issued creating and organizing three coast artillery departments.

(*b*) That a War Department order be issued directing that all estimates for the fiscal year ending June 30, 1910, be made separate from those for the mobile army, and that after the end of the present fiscal year all accounts and expenses pertaining to coast defenses and the coast artillery and all estimates therefor be separate from those of the mobile army.

(*c*) That the necessary steps be taken by the War Department to have a suitable bill prepared and presented to Congress, embodying the recommendations made herein in regard to the creation of a separate coast artillery division and the authorization and appointment of coast artillery general officers.

## ACTUAL AND AUTHORIZED STRENGTH OF THE COAST ARTILLERY CORPS AND MILITIA RESERVES AND SUPPORTS.

The actual strength of the coast artillery on June 30, 1908, was 532 officers and 13,374 enlisted men. The authorized strength on that date was 584 officers and 19,321 enlisted men, showing a shortage of 52 officers and 5,947 enlisted men. Under the provisions of the act approved January 25, 1907, vacancies caused in the grade of second lieutenant were to be filled gradually at the rate of 20 per cent per year. Under this provision the authorized number of officers was increased by 44 second lieutenants on July 1, 1908, and will subsequently be increased by 44 more on July 1, 1909, and 43 more on July 1, 1910, at which time the total number of officers authorized for the corps will be 715, including 14 chaplains. It will be seen that on June 30 there were 52 vacancies in the grade of second lieutenant, and on July 1, 96 such vacancies.

Increased corps of cadets.

Foreseeing the great need of officers for the artillery and the difficulty that would be encountered in getting experienced officers, the Chief of Artillery on February 8, 1908, recommended that some provision be made for increasing the corps of cadets at West Point by authorizing additional cadets for each Senator and additional cadets to be appointed by the President. This recommendation was approved by the War Department and the first part of it was incorporated in the Military Academy bill by the Senate, but was stricken out in conference. This necessity for trained officers is so important to the two artillery branches and to the other branches of the service as well that an earnest effort should be made next session for increasing the corps of cadets.

Manning detail for coast defenses, United States.

The present authorized strength of the coast artillery and the strength of the personnel required to furnish a single manning detail for the coast defenses already provided in the United States, as well as the strength required for the additional defenses contemplated in the United States and our insular possessions, together with suggestions made by myself as to how this requisite strength of personnel may possibly be obtained, are given in the following extract from my last annual report:

The act of January 25, 1907, provided an increase of 5,043 enlisted men in the coast artillery. Of this increase, 4,970 men were for the purpose of providing one complete manning detail for all mines, searchlights, and power plants to be operated in connection with the defense of all fortified harbors of the United States now completed or under construction. Deducting this 4,970 from the authorized maximum enlisted strength, 19,321, there remains 14,351 authorized by law for manning all guns now mounted in the fortifications of the entire country. These guns, however, actually require 36,863 men for one complete detail, so that the maximum number of men now authorized for gun defense is 4,080 short of one-half of one complete manning detail for the guns already mounted in the United States.

In addition, 330 men will be required for the operation of the mines, searchlights, and power plants and 5,546 men for the gun defenses of the United States projected by the National Coast Defense Board, making a total of 47,709 enlisted men required for the defenses of the United States alone as now completed and projected. For the defenses of the insular possessions and of the Panama Canal, as projected by the National Coast Defense Board, there will be required 1,270 men for the operation of mines, searchlights, and power plants and 6,131 men for the gun defenses, a total of 7,401 men. It is thus seen that 55,110 men are required for one complete manning detail for all our defenses as completed and projected.

When Congress began the present method of yearly appropriations for coast defenses, under which about $84,000,000 have already been appropriated for the United States and insular possessions, no doubt some thought was given to the question of the number of men that would be necessary to care for the costly fortifications, to enable proper training in the duties of coast artillerymen to be given in time of peace, and also to insure the efficient handling of all elements of the defenses in time of war.

It has heretofore been held that at least one complete manning detail for all guns mounted and mines to be planted should be provided in time of peace, and it has been thought by some authorities that in time of war two, and possibly three, reliefs would be found necessary for certain positions. Furthermore, it has been recommended by former Chiefs of Artillery that the coast artillerymen authorized by law should be distributed among all coast artillery forts as proportionately as practicable, according to their armament.

This policy was followed by the War Department until last year, when, on my recommendation, the Secretary of War approved a scheme of concentrating *the men* in each artillery district in one or more main posts, giving, as nearly as *practicable, one complete* manning detail at these main posts, but leaving at all

other posts in the district only small caretaker detachments of just sufficient size to properly care for their armament and equipment; the smaller posts, according to the scheme, are to be considered and designated subposts of the main posts, and all matters pertaining to administration are to be conducted from the main posts. The effect of such concentration will be to simplify all administrative duties in the districts and reduce the expenses connected therewith. The chief advantage, however, will be an increase of coast artillery efficiency, due to the fact that with the larger posts garrisoned with a full manning body, or nearly so, battle and fire command drill may be had, and field officers of artillery will be given an opportunity thereby to practice in peace the fire-action duties connected with the larger tactical units which they would be required to perform in war. In addition, the more formal routine life of large posts always makes for a higher standard of discipline than obtains at the smaller posts.

It is self-evident that to insure the efficient handling of all elements of the defenses in any harbor in time of war, at least one manning detail for all the elements is necessary, and it is more than probable that in case of a long-continued attack on or siege of a harbor more than one relief for some, if not all, of the elements would be required. But while this is true in time of war, it is believed, after a careful consideration of all matters connected with the subject, that the completed defenses can be cared for properly in time of peace and the coast artillerymen authorized by law can at the same time be given proper training in the handling of all elements of coast defense, provided (1) that the scheme of concentration outlined above is carried out; (2) that the full number of all officers and enlisted men needed for the operation of mines, searchlights, and power plants as now authorized by law is kept up; and (3) that one-half of one complete manning detail of all officers and enlisted men required for the service of the guns proper shall be authorized by law as the peace footing for the fortifications of the United States.

* * * * * * *

**Manning detail for coast defenses, insular ports.**

For the insular possessions it is considered that one complete manning detail of regular coast artillery should be authorized by law as the peace footing for all the gun and mine defenses when completed. The impossibility of forming a militia or other reserve in these possessions renders the one complete manning detail of regular coast artillery, on both a peace and a war footing, a necessity. It would, for a like reason, be necessary to rely on detachments from the regular infantry stationed in the islands for coast artillery supports in these possessions.

The importance of the early consideration by the proper authorities of some method of obtaining the trained personnel necessary to provide at least one manning detail for our costly coast defenses, as well as the troops necessary to protect the forts from attack from the rear in time of war, and also of taking the necessary steps in time of peace for carrying out such methods of training and mobilization as may be decided upon, can hardly be overstated, for unless this is done the full value of the defenses can not be realized in war, and until it is done we are liable to meet with national disaster in case of sudden outbreak of war with and attack by an enterprising maritime enemy. The method here suggested for obtaining this personnel is considered to be entirely feasible, and it is believed that if it is carried out as suggested it would prove comparatively inexpensive in time of peace. It would at short notice, in the event of sudden war, call to the colors well-trained artillery reserves and supports to supplement the one-half of one manning detail of regular coast artillerymen authorized by law as a peace footing. The ultimate effect of this would be to render every fortified harbor on our coast safe from sudden naval attack or raids of an enemy and to leave our navy perfectly free to perform its proper function on the sea of seeking the enemy's fleet, unhampered and untrammeled by any thought of unprotected cities, navy-yards, or ports at home.

During the past year appropriations have been made for a number of additional guns in the United States and insular possessions, and also for mine defenses in the latter. The personnel required to furnish 50 per cent of one manning detail for the additional guns authorized in the United States is 4 officers and 116 enlisted men; to furnish 100 per cent of one manning detail for the guns mounted and author-

ized, and mines provided in insular possessions, 105 officers and 2,875 men—a total of 109 officers and 2,991 men.

The total strength of the Coast Artillery Corps now authorized is 701 officers (excluding chaplains) and 19,321 enlisted men. To furnish one-half of the personnel required for one complete manning detail for the guns provided in the United States, the full number for the mines, and the full number for the guns and mines now provided for the insular possessions will require 1,070 officers and 26,392 enlisted men—or 370 officers and 7,071 men in addition to those now authorized by law.

**Organized militia to supplement manning detail.**

It is contemplated that one-half of a complete manning detail for the guns of the forts of the seaboard States shall be furnished from the organized militia of these States. This will require 796 officers and 18,547 men, distributed among the States as follows:

| States. | Officers. | Men. |
|---|---|---|
| Maine | 52 | 1,213 |
| New Hampshire | 14 | 305 |
| Massachusetts | 65 | 1,578 |
| Rhode Island | 52 | 1,185 |
| Connecticut [a] | 47 | 1,040 |
| New York | 76 | 1,904 |
| New Jersey (Sandy Hook) | 25 | 670 |
| Pennsylvania (Delaware River) | 28 | 695 |
| Maryland | 27 | 567 |
| District of Columbia (Potomac forts) | 23 | 475 |
| Virginia | 35 | 806 |
| North Carolina | 13 | 317 |
| South Carolina | 22 | 540 |
| Georgia | 13 | 278 |
| Florida | 54 | 1,177 |
| Alabama | 17 | 384 |
| Louisiana | 15 | 306 |
| Texas | 22 | 447 |
| California | 85 | 2,089 |
| Oregon (Columbia River) | 31 | 634 |
| Washington | 75 | 1,823 |
| Total | 796 | 18,547 |

[a] Includes 50 per cent of personnel for guns of all forts at Eastern Entrance, Long Island Sound.

The seacoast States have coast artillery corps organization as follows:

| States. | Number of companies. | Officers. | Men. |
|---|---|---|---|
| Alabama | 1 | 3 | 54 |
| Connecticut | 14 | 50 | 830 |
| Florida [a] | 3 | 9 | 75 |
| Georgia | 4 | 17 | 155 |
| Maryland | 1 | 2 | 46 |
| Massachusetts | 12 | 49 | 735 |
| New York | [b] 30 | 112 | 2,201 |
| Oregon [c] | 1 | 3 | 70 |
| Total | | 239 | 4,166 |

[a] Figures given are for the first company; the other companies, it is understood, are being organized.
[b] Two bands.
[c] This company was ordered to be organized by state orders of July 9, 1908.

The State of Washington hopes to organize 4 companies as soon as law can be modified, and, by March 1, 1909, to have a corps of 11 companies.

In the State of Oregon plans have also been projected for additional companies of coast artillery.

The State of North Carolina is contemplating the organization of a battalion of 4 companies of coast artillery.

The State of Rhode Island has signified its intention of transferring all of its organized militia to coast artillery, which will make a corps of 16 companies, and, within the past few days, submitted a requisition for coast artillery armory equipment.

The State of California has informed the War Department that, if the militia bill (now a law) were passed, steps would be taken to organize a corps of coast artillery.

The military authorities of Maine and New Hampshire have stated that the question of organizing coast artillery corps will be taken up at the next meetings of the State legislatures, respectively.

The adjutant-general of Virginia has stated that an endeavor will be made to organize a battalion of coast artillery.

Some of the States, it is thus seen, have already provided their full quota, with a surplus of both officers and men. This surplus it is proposed to use either as a second relief or as artillery supports, depending on which may be considered desirable for peace maneuvers or necessary in case of war. Some of the other States have provided a portion of their quota; and some have yet to begin the organization of coast artillery reserves. From what has been heard from the adjutants-general of a number of the States interested, and what has been learned from other sources, I am confident that all of the seacoast States having fortified harbors within their borders will in time provide a portion, if not all, of their respective quotas of coast artillery reserves.

As to the *necessity* for the formation of militia coast artillery reserves, it has been pointed out in my annual reports for the last two years, that it will require *2,278* officers and *55,110* men to provide *one manning detail* for all the coast defenses constructed and proposed in the United States, the insular possessions, and the entrances to the Panama Canal. It is not believed to be within the bounds of either probability or possibility that Congress will authorize in time of peace, this number of officers and men for the regular coast artillery, and, as stated in the above extract from my last annual report, it is self-evident that to insure the efficient handling of all elements of the defenses in any harbor in time of war at least one manning detail for all the elements is necessary. This being so, we must *of necessity* turn to the militia of the seaboard States interested for help if we are to realize, in time of war, the full value of the many millions that have already been expended on our seacoast defenses, remembering that every element of those defenses lacking the requisite personnel to man it is of no more value as a war weapon than so much junk.

As to the *value* of the militia coast artillery reserves, it is not, and never has been, for a moment thought that such troops with one or two weeks annual training at the seacoast forts and such training as can be given them in their armories at other times can ever be made equal to regular coast artillery troops which are given a daily training at the forts for nine months every year and daily indoor instruction for the remaining three months, but it is confidently believed that if these reserves are given the annual one or two weeks outdoor training as proposed and such indoor instruction in seacoast artillery work as may be practicable in their armories with the means provided by congressional appropriations for apparatus, such as was made at the last session of Congress, they can, at the outbreak of war, render valuable assistance which could not otherwise be obtained from any source, and after a short time can be brought to a full measure of proficiency.

In addition to these militia coast artillery reserves there will be needed, as is pointed out in my last annual report, other militiamen to form "artillery supports" for the land defense of the forts; and as the supports will be needed promptly on the outbreak of war, it is

considered that the question of providing them promptly should receive early consideration by the War Department, and that the necessary steps for carrying out whatever policy may be decided on for providing them should be taken at the earliest practicable moment.

## MATERIAL.

Appropriations for seacoast defense.

The total appropriations, including the amounts expended from the national defense fund, act of March 8, 1898, for the seacoast defenses of the United States from January 25, 1886 (Report of the Endicott Board), to February 1, 1906 (Report of the National Coast Defense Board), are as follows:

| | |
|---|---|
| Gun and mortar batteries (including modernizing) | $29,143,434.02 |
| Guns and carriages [a] | 35,779,409.22 |
| Ammunition | 7,069,564.00 |
| Submarine mines | 4,935,762.27 |
| Searchlights | 800,000.00 |
| Fire control [a] | 4,190,346.71 |
| Total | 81,918,516.22 |

The total appropriations for the seacoast defenses of the insular ports previous to February 1, 1906 (Report of the National Coast Defense Board), are as follows:

| | |
|---|---|
| Gun and mortar batteries | $1,400,000 |
| Guns and carriages | 376,920 |
| Ammunition | 100,000 |
| Submarine mines | 150,000 |
| Fire control | 16,000 |
| Total | 2,042,920 |

The amounts estimated by the National Coast Defense Board in their report of February 1, 1906, for completing the defenses of the United States, of the insular ports, and of the entrances to the Panama Canal, and the amounts which have been appropriated for each of these purposes since February 1, 1906, are as follows:

UNITED STATES.

| | |
|---|---|
| Estimate of National Coast Defense Board (February 1, 1906) | $50,879,339 |
| Total appropriated | 6,768,405 |
| | 44,110,934 |

| | Appropriated— | | | |
|---|---|---|---|---|
| | Act June 25, 1906. | Act March 21, 1907. | Act May 27, 1908. | Total. |
| Gun and mortar batteries | | | $300,000 | $300,000 |
| Modernizing older emplacements | $150,000 | $100,000 | 165,261 | 415,261 |
| Guns and carriages | 174,000 | 132,000 | 273,000 | 579,000 |
| Ammunition | 325,000 | 325,000 | 325,000 | 975,000 |
| Submarine-mine structures | 175,000 | 175,000 | 175,000 | 525,000 |
| Submarine-mine equipment | 300,000 | 250,000 | 310,000 | 860,000 |
| Submarine-mine planters and launches | | 175,000 | 175,000 | 350,000 |
| Power plants | | | 348,888 | 348,888 |
| Searchlights | 125,000 | 210,000 | 210,000 | 545,000 |
| Fire control | 700,000 | 900,000 | 270,256 | 1,870,256 |
| Additional lands for gun defense | | | | |
| | 1,949,000 | 2,267,000 | 2,552,405 | 6,768,405 |

[a] The differences between these amounts and those given on page 7, Report of the National Coast Defense Board, are due to the fact that the latter figures do not include the unallotted balances of these appropriations existing at the time of compilation.

INSULAR POSSESSIONS.

| | |
|---|---|
| Estimate of National Coast Defense Board (February 1, 1906) | $19,873,895 |
| Total appropriated | 6,395,560 |
| | 13,478,335 |

| | Appropriated— | | | |
|---|---|---|---|---|
| | Act June 25, 1906. | Act March 21, 1907. | Act May 27, 1908. | Total. |
| Gun and mortar batteries | $410,000 | $700,000 | $1,354,000 | $2,464,000 |
| Guns and carriages | 400,000 | 400,000 | 704,000 | 1,504,000 |
| Ammunition | 100,000 | 50,000 | 250,000 | 400,000 |
| Submarine-mine structures | | 200,000 | 129,000 | 329,000 |
| Submarine-mine equipment | | 205,440 | 351,620 | 557,060 |
| Submarine-mine planters and launches | | | 374,000 | 374,000 |
| Power plants | | | 135,000 | 135,000 |
| Searchlights | | 30,000 | 227,500 | 257,500 |
| Fire control | 32,000 | 100,000 | 243,000 | 375,000 |
| | 942,000 | 1,685,440 | 3,768,120, | 6,395,560 |

ISTHMIAN CANAL.

| | |
|---|---|
| Estimate of National Coast Defense Board (February 1, 1906) | $4,827,682 |

From the foregoing it will be seen that the coast defenses of the United States are about two-thirds completed and of the insular possessions about one-third completed.

Seacoast defenses, insular possessions.

In the insular possessions the provision of more batteries and the accessories necessary for their service is an urgent need. The importance of the early completion of the coast defenses of certain localities in these possessions lies in the fact that such defenses are necessary not only for the protection and retention of these possessions, but also, and of greater moment as affecting fundamentally any scheme of national defense, for affording secure naval bases and coaling stations. Without such fortified bases the retention of our insular possessions, the protection of our commerce, and the ability of our navy to conduct offensive operations outside of narrow zones bordering upon the coasts of the United States can be assured only by stationing in every possible theater of operations a fleet superior to the combined fleets of the enemy; a condition wholly impracticable of attainment. The alternative of providing well-fortified bases in our insular possessions, freeing the navy for the most effective mobilization and the widest range of action, can be carried out at a very small fraction of the cost of such a naval policy. The localities in our insular possessions which should be fortified for strategical or commercial reasons have been selected heretofore and the work of fortifying several of them is now in progress. The appropriations made by Congress have been sufficient to provide for the practical completion of the fortifications for Subic Bay, the partial completion of those for Manila Bay, Pearl Harbor, and Honolulu, and the initiation of work at Guantanamo. Of the remaining work to be done in the insular possessions, the most necessary is the completion of the defenses of Manila Bay, Pearl Harbor, and Honolulu, and Congress should be asked to provide, this year, for this work. Strategical considerations of the highest order demand the early completion of the coast defenses projected for these localities, and I strongly recommend that the War Department, in presenting to Congress the [illegible], lay special stress upon the importance and

Seacoast defenses, United States.

The expenditures for the defenses in the United States already completed have been mainly for guns and their emplacements. Considering the present condition of these defenses, the four elements of defense most needed, and which will, if provided, secure the greatest measure of public safety at the least cost, are:

I. The completion of the installation of the approved system of fire control for all guns and mortars mounted.

II. The provision of necessary searchlights for harbor defense at night.

III. The provision of power plants for use in connection with both guns and mines.

IV. The completion of the submarine-mine equipment of all fortified harbors.

## I. Fire Control.

The total amount of funds appropriated for fire control in the United States up to date is $6,060,602.71, which has been utilized as follows:

Standard installations.

(*a*) The standard fire-control installations of Portland, Boston, New York, Puget Sound, San Francisco, and Columbia River are completed, or will be completed, from funds available. The installations at this time are in various stages, those of all forts in New York Harbor, and of Forts Revere, Warren, Strong, Andrews and Banks, in Boston Harbor, being finished, and that of the Columbia River not yet progressed beyond the purchase of material. No further funds will be required for these harbors until such time as the additional defenses recommended by the National Coast Defense Board are provided, at which time the additional fire-control installation connected with these works will have to be taken up. The cost estimated by the National Coast Defense Board for this additional fire-control work is as follows: New York, $104,980; Boston, $302,860; Portland, $49,385; Puget Sound, $391,791; San Francisco, $80,490; and Columbia River, $59,830.[a]

Provisional installations.

(*b*) Provisional fire control installations have been installed, or are in process of installation, for all batteries and fire commands to which troops are assigned in artillery districts other than those mentioned as having the standard system for all batteries. These installations are not uniform in type, part being of the latest improved plans and part being according to plans now obsolete. They provide, however, a means by which all coast artillery troops can be instructed in accordance with latest developments in methods and appliances, and, while not as highly efficient for the purpose of defense as the standard installations, they in all cases would be capable of giving a comparatively efficient range and position-finding service. The provisional fire-control material will, so far as is practicable, be utilized later in the installation of the standard system when the latter is provided. Some of the provisional installations will be of little value, while others, by an addition of only 20 per cent, will be fully converted to the standard equipment.

[a] The figures given in the last annual report did not include ordnance equipment.

(*c*) With the exception of type A instruments, there is very nearly enough ordnance equipment on hand or under manufacture to provide for the proposed fire-control installations of all the defenses so far provided in the United States. This is shown as follows:

*Ordnance fire-control equipment.*

| Instruments. | Required. | | | On hand or under manufacture. | |
|---|---|---|---|---|---|
| | For defenses already provided in United States. | For defenses recommended by National Coast Defense Board for United States. | For insular possessions. | For United States. | For insular possessions. |
| Observation telescope | 132 | 33 | 35 | 83 | 17 |
| Plotting board, fire commander | 40 | 7 | 6 | 14 | ..... |
| Range finders, type "A" | 555 | 123 | 105 | 317 | ..... |
| Plotting board, gun | 163 | 33 | 22 | 204 | 16 |
| Range board | 126 | 30 | 21 | 152 | 8 |
| Deflection board, gun | 126 | 30 | 21 | 131 | 8 |
| Wind-component indicator | 126 | 30 | 21 | 126 | 8 |
| Plotting board, mortar | 88 | 14 | 14 | 70 | ..... |
| Deflection board, mortar | 47 | 11 | 13 | 48 | ..... |
| Set forward ruler, mortar | 47 | 11 | 13 | 47 | 8 |
| Prediction scale | 47 | 11 | 13 | 50 | 8 |

The Ordnance Department now has on hand sufficient funds to purchase about one hundred and twenty-six (126) type "A" instruments.

From the $270,256 appropriated for the current fiscal year allotments have been made for the engineer and signal corps installations of the artillery district of the Columbia and for the purchase of 83 observation telescopes by the Ordnance Department.

**Appropriations and estimates.**

The appropriation for fire control in the United States for 1908 is the smallest made for that purpose since the installation of the modern system began about seven years ago. From that time and up to 1908 the average annual appropriation for fire control for the United States was $820,381. If that rate of appropriation should be maintained, in the next five years enough money would be appropriated to complete the system so far as it pertains to existing defenses.

If the batteries are completed, guns mounted, and no fire-control installation provided, the defenses will be of little value. Mortars would be of no value whatever without some fire-control installation, improvised or otherwise. At night, when an attack may most likely be expected, batteries without searchlights would be practically useless. Searchlights, however, would be of no value without a fire-control installation. These are undisputed and fundamental principles of modern coast defense. In view of them, the relative cost of the battery and the fire-control installation which gives it life should be considered comparatively. The cost of a battery fire-control installation is about 5 per cent of the cost of the battery. The average cost of the fire-control installation per harbor is less than the cost of a single battery of two 12-inch guns.

The development of the coast artillery and the value of the present system of fire direction may be seen from a comparison of the results of target practice of 1900 and 1906. In 1900 the best result obtained at target [redacted] caliber guns was by a battery which

scored 50 per cent of hits at a range of 4,500 yards, firing at the rate of one shot per gun every three minutes. During 1906 100 per cent of hits were obtained by a number of batteries at ranges of from 6,000 to 7,000 yards, firing at the rate of one shot per gun every forty-five seconds. From this it will be seen that, due to improvements in our system of fire direction and to efficient training of our coast artillery personnel, eight times as many hits from a heavy gun in a given time were obtained in 1906 as in 1900, and at a range in 1906 at which the chance of hitting is one-half as great as that at the range used in 1900. In other words, about sixteen times as many hits were made in 1906 from the same gun, in a given time, at the same range, as were made in 1900. Thus the expenditure of a comparatively small amount on our fire-control installation and by thorough training of our artillerymen, the value of our gun defenses, as estimated by their hitting capacity, was increased sixteenfold in six years.

The result of target practice for the years 1907 and 1908 show that the average battery hitting capacity has been very largely increased.

**To hasten completion.**

Every step should be taken to hasten to completion the fire-control installations for all existing defenses, and in order that the eventual completion of this work may not be postponed it is urged that the appropriation for the next year be large enough to offset the small appropriation of this year and maintain the average rate of appropriation above mentioned. It is therefore recommended that the Secretary of War include in his estimates $1,785,009 in order to provide fire-control installations for the defenses already completed in the following harbors:

| | |
|---|---|
| Hampton Roads | $306,114 |
| Eastern entrance to Long Island Sound | 397,244 |
| Narragansett Bay | 572,500 |
| Baltimore | 262,096 |
| Galveston Bay | 247,055 |
| Total | 1,785,009 |

Galveston is included because it will be necessary to install some kind of fire-control system there to provide the troops with a means of drill, and it would not be in the interests of public economy to install a provisional system to be subsequently replaced by the standard system.

For the insular possessions $243,000 was appropriated by the act of May 27, 1908, for fire control, which was allotted as follows:

| | | |
|---|---|---|
| Engineer Department: | | |
| Honolulu | $50,000 | |
| Carabao | 15,000 | |
| Corregidor Island (ducts, etc.) | 10,000 | |
| | | $75,000 |
| Signal Corps: | | |
| Corregidor Island | 55,815 | |
| Carabao | 26,780 | |
| Pearl Harbor | 18,427 | |
| Honolulu | 53,080 | |
| | | 154,100 |
| Ordnance Department: | | |
| 14 D. P. F. instruments | 13,300 | |
| 20 time range boards | 600 | |
| | | 13,900 |
| *Total* | | 243,000 |

These amounts are sufficient to provide fire-control installations for all defenses of the Philippine and Hawaiian Islands for which appropriations have so far been made. The amounts are very much less than the estimates of the National Coast Defense Board, due to the simplification of the system and to the omission of a great many horizontal base lines. It is recommended that the estimate for the next fiscal year be sufficient to provide for the gun and mine defenses for which estimates are submitted. The amount required has not yet been definitely determined, but it will probably be not more than $250,000.

## II. Searchlights.

The searchlight as an auxiliary to gun and submarine-mine defense has been rapidly developed within the last few years, and recent combined army and navy maneuvers have shown clearly that they are absolutely necessary for disclosing the presence of an enemy's ships at night. With them the ships may be so illuminated as to render the position-finding system almost as efficient at night as during the day; without them a "run by" at night can be prevented only by means of mines or obstructions, which in turn can be removed with comparative ease if their location be not illuminated by searchlights.

The following is quoted from report of Board of Review of Army and Navy Exercises in June, 1905:

> The searchlights ashore were inadequate in number and many were deficient in power. There were no lights in reserve to replace those injured or destroyed, and those in use were unequal to the task of at all times lighting the channel of approach in a manner to guarantee detection at long or even medium ranges. But few targets could be illuminated at a time for want of sufficient lights. As operations against coast defenses are likely to be undertaken mainly under cover of darkness, the question of searchlights is one of primary importance. The best efforts of the artillery should be directed to the solution of the problem of the proper number, size, location, distribution, and employment of searchlights. It is, like many coast-artillery questions, a local problem, and it should be worked out for each artillery district.

Home ports.

The estimated cost of searchlights necessary for the gun defense of all fortified harbors of the United States, recommended by the National Coast Defense Board in their report of February 1, 1906, is $2,376,000, and for the mine defense $669.000, giving a total of $3,045,000 as the estimated cost of providing all the searchlights necessary for the defense of the United States. Of this amount, $2,346,000 was necessary to provide the searchlights required for the existing gun and mine defenses.

The following appropriations for searchlights for home ports have been made since the report of the National Coast Defense Board (February 1, 1906):

| | |
|---|---|
| By the act approved June 25, 1906 | $125,000 |
| By the act approved March 2, 1907 | 210,000 |
| By the act approved May 27, 1908 | 210,000 |
| Total | 545,000 |

which being subtracted from $2,346,000 still required to provide the necessary searchlights for gun and mine defenses.

From funds which were appropriated previous to the report of the Taft Board, the Engineer Department purchased 30 portable 36-inch searchlight outfits, which were intended to be used in testing various positions of lights in the different harbors before assignment to permanent stations. Four (4) of these lights were sent to the Philippine Islands, nineteen (19) to artillery districts, and seven (7) were assigned to a searchlight party which has visited the artillery districts of Portland, Portsmouth, Chesapeake Bay, Charleston, Pensacola, San Francisco, Columbia, and Puget Sound and is now under orders to visit the artillery districts of Boston, Narragansett Bay, New London, and the southern artillery district of New York for the purpose of testing the suitability of various sites for searchlights and preparing plans for the searchlight installation in these districts.

There have been considerable developments recently in searchlights, involving changes in the projector, the lamp mechanism, the controller, and suitable power units, and as a result the Engineer Department is preparing specifications for searchlights which will embody the best features that are now shown in the different types of lights. Under these specifications lights will be purchased to the limit of the available appropriations, which are just sufficient to complete the searchlight installations for the existing gun and mine defenses of the artillery districts of San Diego, San Francisco, the Columbia, and Puget Sound.

The amounts required to install the searchlights for existing gun and mine defenses at the following places are shown in each case:

| | |
|---|---|
| Artillery district of Portland | $139,000 |
| Artillery district of Boston | 208,000 |
| Artillery district of Narragansett Bay | 226,000 |
| Artillery district of New London | 172,000 |
| Southern artillery district of New York | 162,000 |
| Making a total of | 907,000 |

The Chief of Coast Artillery recommended that this amount be included in the estimates to be presented to Congress at the coming session.

Insular and isthmian ports.

The estimated cost of searchlights for the gun defense of harbors to be fortified in the insular possessions, as given by the National Coast Defense Board, is $589,000; and for the mine defense $174,000, giving a total of $763,000; and for the gun searchlights at the Isthmian Canal ports $228,000, making a total for insular and isthmian ports of $991,000.

The following appropriations for searchlights for insular ports have been made since the report of the National Coast Defense Board:

| | |
|---|---|
| By act of March 2, 1907 | $30,000 |
| By act of May 27, 1908 | 227,500 |
| Total | 257,500 |

which, being subtracted from $763,000, leaves $505,500 still required to provide the necessary searchlights for the gun and mine defenses in the insular ports and in addition the $228,000 required for the gun defense of the isthmian ports.

The available appropriations are sufficient to install in—

| | Number. | Searchlight. |
|---|---|---|
| | | *Inches.* |
| Honolulu | 2 | 60 |
| | 1 | 36 |
| Grande Island | 2 | 60 |
| | 3 | 36 |
| Corregidor Island | 6 | 60 |
| | 1 | 36 |
| Caballo Island | 1 | 36 |
| El Fraile Island | 1 | 36 |

The amounts required to complete the installation of the searchlights at the following places are shown in each case, namely:

| | |
|---|---|
| Honolulu | $38,000 |
| Pearl Harbor | 66,000 |
| Caballo Island | 19,000 |
| Carabao Island | 57,000 |
| Total | 180,000 |

It has been recommended that this amount be included in the estimates to be presented to Congress at the coming session.

## III. Power Plants.

Under the heading of "Power plants and electrical installations" the National Coast Defense Board states:

The use of electricity in connection with seacoast defense has become necessary for—

1. Current for motors to operate ammunition hoists in order that the service of ammunition may be equal to the increased rapidity of the fire of guns.
2. Current for the system of range finding, fire control, and fire direction.
3. Current for searchlights.
4. Current for lighting various parts of the emplacements and range-finding stations.
5. Current for motors for retracting guns on disappearing carriages.

Home ports.

In a tabulated estimate of the coast artillery material needed for the completion of the harbor defense of "home ports," the National Coast Defense Board's estimate for the cost of "central power plants" for these home ports is $3,062,664, and for the cost of reserve plants is $2,153,367. Before the act of May 27, 1908, no direct appropriations had ever been made for power plants for fortifications and all such plants as had been constructed for this purpose were built from the general appropriation for gun and mortar batteries. As no appropriations for new batteries in the United States had been made for several years past and as the need for fortification electric power was increasing, due not only to deterioration of existing plants, but on account of the additional requirements for electric power in the batteries, upon the recommendation of the Chief of Artillery an item of $1,000,000 was included in the estimates submitted by the Secretary of War to Congress at the last session.

The act of May 27, 1908, contained an appropriation of $348,888 for power plants, which is the amount, according to the estimate of the National Coast Defense Board, required to install the central

fortification plants required for the following places: Forts Casey, Stevens, Barry, Baker, and Winfield Scott.

While this is a start in the right direction, more liberal appropriations will be necessary in order to supply the batteries with the proper power and it has been recommended that an item of $984,352 be included in the estimates of the Secretary of War for power plants for the fortifications in the United States.

Insular ports.

Considering the necessary power plants for the insular possessions, the National Coast Defense Board recommended an expenditure of $34,469 for the emplacement plants for Honolulu and Pearl Harbor. By the act of May 27, 1908, $20,000 was appropriated for this purpose, which leaves $14,469 still required for the emplacement plants in the Hawaiian Islands. The National Coast Defense Board also included in their recommendations an item of $72,089 for a central power plant at Grande Island, and $259,080 for the central power plants for the fortifications in Manila Bay. The act of May 27, 1908, carried an item of $115,000 for power plants in the Philippine Islands, which leaves $216,169 yet to be appropriated for the central power plants required by the defenses of Subic and Manila bays. It has been recommended that this amount, together with the $14,469 necessary to complete the fortification plants in the Hawaiian Islands, making a total of $230,638 in all, be included in the estimates to be submitted by the Secretary of War to Congress at the coming session.

## IV. Submarine Mines.

Recent war has shown clearly the value of submarine mines as an element of harbor defense. If a harbor is defended by an efficient system of mines and the requisite guns for their protection against countermining, sweeping, or other methods of removing them, it is not believed that any enemy, however enterprising, will ever attempt to force an entrance into a harbor with large ships. This conclusion has been supported strongly by the terrible destruction wrought by the submarine mines at Port Arthur and Dalny during the Russo-Japanese war. Our system of submarine mines is practically perfect as a war weapon. Being under complete electrical control from the shore, a line of mines may be rendered instantly destructive to an enemy or harmless to passing friendly vessels.

Home ports.

While all progress toward the completion of both submarine mine structures and equipment has been made to the limit of the available appropriations, it can not be too strongly pointed out that the completion of this defense of our harbors should be pushed to a condition of absolute preparedness. The estimates show that at less than one-fourth the cost of a fully equipped battle ship the mine defense of the United States can be completed from Portland, Me., to Puget Sound. When the value of this completed mine defense is considered, not only for its actual worth as a destructive weapon, but also for its moral effect and its comparatively small cost, it will be apparent that this completion should be accomplished at the earliest possible moment.

Moreover, it should be clearly understood and fully appreciated by those in authority that we can not afford to wait for war before *completing our* mine defense; we must be prepared beforehand, for

otherwise no amount of money made available at the outbreak of war could procure mine material in time to be of service in mine defense against an active maritime enemy. Essential parts of this material, such as cables, mine cases, and electrical apparatus, can not be bought at a moment's notice in open market, but must be manufactured to order, and after having been ordered, months are required to fill the orders.

If confronted suddenly by war, only such mine material as is on hand can be utilized for immediate mine defense, and if any essential part of the mine system is lacking the whole mine defense must fail. If the enemy is aggressive, an attack on a harbor may even precede a formal declaration of war, as was the case in the attack on Port Arthur in February, 1904. To meet such an emergency the complete mine equipment of every harbor to be mined should be kept on hand ready to be planted, and it should be made possible to mine effectively every harbor within forty-eight hours. The estimated cost of completing the submarine mine defense of the United States is, structures, $404,764; material, $1,322,405, making a total of $1,727,169; and of the insular possessions, structures, $227,000; material, $280,463, making a total of $507,463.

It has been recommended that the estimates for this year contain the following items:

(*a*) For mine structures in the United States..... $289,964

This would complete the engineer part of the mine defense for the United States, according to the estimates of the National Coast Defense Board, excepting Cape Henry, Fishermans Island, and San Jacinto, for which latter places the amount required is $114,800.

(*b*) For mine material for the United States..... $763,700

This would complete the material of the mine defense of the United States, with the exception of certain material for Forts H. G. Wright and Terry, together with that for the following ungarrisoned posts requiring mine defense: Fort Popham, Cape Henry, Fishermans Island, and San Jacinto, for which latter places the amount required is $558,705.

(*c*) For mine material for insular possessions..... $38,031

Insular ports.

The past appropriations cover the mine structures for Manila Bay, Subic Bay, Honolulu, and Pearl Harbor, and the mine material for all of these places except Pearl Harbor, which requires the above amount.

## BARRACKS AND QUARTERS FOR THE COAST ARTILLERY.

In addition to the necessity for the elements of defense which have been referred to in the preceding part of this report, the matter of furnishing proper barracks and quarters for the garrisons is of the greatest importance and is treated in detail for both the United States and the insular possessions.

### UNITED STATES.

The last session of the Fifty-ninth Congress excluded from army bill any appropriation for barracks and quarters for

artillery, and provided therefor by a special appropriation of $1,250,000 in the sundry civil act approved March 4, 1907. This method of appropriation was continued in the first session of the Sixtieth Congress, the sundry civil act of May 27, 1908, carrying an item of $2,139,060 " for the erection of barracks and quarters for the artillery in connection with the adopted project for seacoast defenses."

The policy seems to be adopted for separating this appropriation from that for housing the mobile army, and the Chief of Coast Artillery is of the opinion that the policy is a wise one.

The following tabulation indicates the construction which has been or will be undertaken with the $3,389,060, above mentioned, so far as can be told at the present time, and also what will remain to be done in order to provide for the present authorized force of coast artillery in accordance with the plans approved by the Secretary of War November 21, 1906.

| Fort. | Barracks and quarters. | | | | | |
|---|---|---|---|---|---|---|
| | Class of buildings. | Constructed or under construction, June 30, 1907. | Provided from appropriation of March 4, 1907. | To be provided from appropriation of May 27, 1908. | Remaining to be provided. | Total. |
| McKinley, Me. | Company barracks | 4 | 1 | 2 | | 7 |
| | Band barracks | | | | | |
| | Colonel's quarters | 1 | | | | 1 |
| | Field officers' quarters | 2 | | | | 2 |
| | Captains' quarters | 4 | | | 1 | 5 |
| | Lieutenants' quarters | 8 | | | | 8 |
| | Bachelors' quarters | | | 5 | | 5 |
| | Noncommissioned officers' quarters | 9 | | 6 | 4 | 19 |
| Williams, Me. | Company barracks | 2 | 2 | 1 | | 5 |
| | Band barracks | 1 | | | | 1 |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | 1 | | | 2 | 3 |
| | Captains' quarters | 2 | | | 4 | 6 |
| | Lieutenants' quarters | 4 | | 2 | 2 | 8 |
| | Bachelors' quarters | | | 5 | | 5 |
| | Noncommissioned officers' quarters | 5 | | 8 | 5 | 18 |
| New post between Fort Stark and Fort Constitution. | Company barracks | | | | 3 | 3 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | | | | 1 | 1 |
| | Captains' quarters | | | | 4 | 4 |
| | Lieutenants' quarters | | | | 6 | 6 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters | | | | 9 | 9 |
| Strong, Mass. | Company barracks | 2 | | 2 | | 4 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | | 1 | 2 |
| | Captains' quarters | 2 | | 2 | | 4 |
| | Lieutenants' quarters | 4 | | 2 | 2 | 8 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters | 7 | | 4 | 1 | 12 |
| Andrews, Mass. | Company barracks | 2 | 1 | 1 | 2 | 6 |
| | Band barracks | | | | 1 | 1 |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | 1 | | 1 | | 2 |
| | Captains' quarters | 2 | | | 4 | 6 |
| | Lieutenants' quarters | 4 | | | 4 | 8 |
| | Bachelors' quarters | | | 5 | | 5 |
| | Noncommissioned officers' quarters | 5 | | 4 | 4 | 13 |

| Fort. | Barracks and quarters. | | | | | |
|---|---|---|---|---|---|---|
| | Class of buildings. | Constructed or under construction, June 30, 1907. | Provided from appropriation of March 4, 1907. | To be provided from appropriation of May 27, 1908. | Remaining to be provided. | Total. |
| Rodman, Mass. | Company barracks | 1 | | | 1 | 2 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | | | 1 |
| | Captains' quarters | 1 | | | 1 | 2 |
| | Lieutenants' quarters | 2 | | | 4 | 6 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters | 5 | | | | 5 |
| Adams, Mass. | Company barracks | 4 | 1 | | | 5 |
| | Band barracks | | 1 | | | |
| | Colonel's quarters | 1 | | | | 1 |
| | Field officers' quarters | 2 | | | | 2 |
| | Captains' quarters | 5 | | | | 5 |
| | Lieutenants' quarters | 10 | | | | 10 |
| | Bachelors' quarters | | | | 4 | 4 |
| | Noncommissioned officers' quarters | 3 | | | 6 | 9 |
| Wetherill, R. I. | Company barracks | | | | 1 | 1 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | | | | | |
| | Captains' quarters | | | | 2 | 2 |
| | Lieutenants' quarters | | | | 2 | 2 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters | | | | 2 | 2 |
| Greble, R. I. | Company barracks | 2 | | 1 | | 3 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | | 1 | 2 |
| | Captains' quarters | 3 | | | 2 | 5 |
| | Lieutenants' quarters | 4 | | | | 4 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters | 7 | | 4 | | 11 |
| H. G. Wright, N. Y. | Company barracks | 2 | | 4 | 1 | 7 |
| | Band barracks | | | 1 | | 1 |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | 1 | | 2 | | 3 |
| | Captains' quarters | 4 | | | 2 | 6 |
| | Lieutenants' quarters | 2 | | 4 | 2 | 8 |
| | Bachelors' quarters | 4 | | | | 4 |
| | Noncommissioned officers' quarters | 7 | 2 | 8 | | 17 |
| Terry, N. Y. | Company barracks | 3 | | 3 | | 6 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | 2 | | 3 |
| | Captains' quarters | 3 | | | 2 | 5 |
| | Lieutenants' quarters | 4 | | 2 | | 6 |
| | Bachelors' quarters | | | 5 | | 5 |
| | Noncommissioned officers' quarters | 7 | | 8 | | 15 |
| Totten, N. Y. | Company barracks | 6 | | 1 | | 7 |
| | Band barracks | | | 1 | | 1 |
| | Colonel's quarters | | 1 | | | 1 |
| | Field officers' quarters | 3 | | | | 3 |
| | Captains' quarters | 14 | | | | 14 |
| | Lieutenants' quarters | 6 | | | | 6 |
| | Bachelors' quarters | 8 | | | | 8 |
| | Noncommissioned officers' quarters | 14 | | | 6 | 20 |
| Hamilton, N. Y. | Company barracks | 3 | | 2 | 2 | 7 |
| | Band barracks | | | | 1 | 1 |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | | | | 2 | 2 |
| | Captains' quarters | | | | 6 | 6 |
| | Lieutenants' quarters | | | | 8 | 8 |
| | Bachelors' quarters | 8 | | | | 8 |
| | Noncommissioned officers' quarters | 9 | | 4 | 6 | 19 |

NOTE.—Old barracks and quarters now at Fort Hamilton not included in plan for reconstructing post.

| Fort. | Barracks and quarters. | | | | | |
|---|---|---|---|---|---|---|
| | Class of buildings. | Constructed or under construction, June 30, 1907. | Provided from appropriation of March 4, 1907. | To be provided from appropriation of May 27, 1908. | Remaining to be provided. | Total. |
| Hancock, N. Y. | Company barracks | 4 | 2 | | 1 | 7 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | | | | 1 | 1 |
| | Captains' quarters | 7 | | | | 7 |
| | Lieutenants' quarters | 11 | | | | 11 |
| | Bachelors' quarters | 4 | | | | 4 |
| | Noncommissioned officers' quarters | 7 | | 6 | 2 | 15 |
| Du Pont, Del. | Company barracks | 3 | | 2 | | 5 |
| | Band barracks | | | 1 | | 1 |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | 1 | | | | 1 |
| | Captains' quarters | 2 | | | 4 | 6 |
| | Lieutenants' quarters | 6 | | | 2 | 8 |
| | Bachelors' quarters | 5 | | | | 5 |
| | Noncommissioned officers' quarters | 6 | | 2 | 5 | 13 |
| Howard, Md. | Company barracks | 3 | | 1 | | 4 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 2 | | | | 2 |
| | Captains' quarters | 1 | | | 2 | 3 |
| | Lieutenants' quarters | 8 | | | | 8 |
| | Bachelors' quarters | | | | 4 | 4 |
| | Noncommissioned officers' quarters | 7 | | 4 | 1 | 12 |
| Washington, Md. | Company barracks | 3 | 2 | | | 5 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | | | | 2 | 2 |
| | Captains' quarters | 2 | | | 1 | 3 |
| | Lieutenants' quarters | 6 | | | | 6 |
| | Bachelors' quarters | 8 | | | | 8 |
| | Noncommissioned officers' quarters | 5 | | 5 | 5 | 15 |
| Monroe, Va. | Company barracks | 8 | 2 | | | 10 |
| | Band barracks | 1 | | | | 1 |
| | Colonel's quarters | 1 | | | | 1 |
| | Field officers' quarters | 2 | 3 | | | 5 |
| | Captains' quarters | 21 | 12 | | 3 | 36 |
| | Lieutenants' quarters | [a] 16 | 2 | | 14 | 32 |
| | Bachelors' quarters | 48 | | | | 48 |
| | Noncommissioned officers' quarters | 18 | 6 | 6 | 8 | 38 |
| Caswell, N. C. | Company barracks | 2 | 1 | | | 3 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | | | 1 |
| | Captains' quarters | 5 | | | 1 | 6 |
| | Lieutenants' quarters | 2 | | | 3 | 5 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters | 7 | | | 1 | 8 |
| Moultrie, S. C. | Company barracks | 4 | | | 1 | 5 |
| | Band barracks | | | 1 | | 1 |
| | Colonel's quarters | 1 | | | | 1 |
| | Field officers' quarters | | | | 1 | 1 |
| | Captains' quarters | 5 | | | 1 | 6 |
| | Lieutenants' quarters | 5 | | | 3 | 8 |
| | Bachelors' quarters | 4 | | | | 4 |
| | Noncommissioned officers' quarters | 7 | | 4 | | 11 |
| Screven, Ga. | Company barracks | 3 | | 1 | | 4 |
| | Band barracks | | | 1 | | 1 |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | | | | | |
| | Captains' quarters | 5 | | | | 5 |
| | Lieutenants' quarters | 6 | | | 2 | 8 |
| | Bachelors' quarters | | | 5 | | 5 |
| | Noncommissioned officers' quarters | 6 | | 2 | 1 | 9 |

[a] The Tuileries are counted as 8 bachelor sets.

| Fort. | Barracks and quarters. | | | | | |
|---|---|---|---|---|---|---|
| | Class of buildings. | Constructed or under construction. June 30, 1907. | Provided from appropriation of March 4, 1907. | To be provided from appropriation of May 27, 1908. | Remaining to be provided. | Total. |
| Taylor, Fla. | Company barracks | | | | 6 | 6 |
| | Band barracks | | | | 1 | 1 |
| | Colonel's quarters | | | | 1 | 1 |
| | Field officers' quarters | | | | 3 | 3 |
| | Captains' quarters | | | | 6 | 6 |
| | Lieutenants' quarters | | | | 8 | 8 |
| | Bachelors' quarters | | | | 5 | 5 |
| | Noncommissioned officers' quarters. | | | | 10 | 10 |
| Dade, Fla. | Company barracks | 1 | 1 | | | 2 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | | | 1 |
| | Captains' quarters | | | | 1 | 1 |
| | Lieutenants' quarters | 4 | | 2 | 2 | 8 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters. | 10 | | 2 | 1 | 13 |
| Barrancas, Fla.[a] | Company barracks | 3 | | 1 | | 4 |
| | Band barracks | 1 | | | | 1 |
| | Colonel's quarters | 1 | | | | 1 |
| | Field officers' quarters | 1 | | | | 1 |
| | Captains' quarters | 7 | | | | 7 |
| | Lieutenants' quarters | 5 | | | | 5 |
| | Bachelors' quarters | 8 | | | | 8 |
| | Noncommissioned officers' quarters. | 8 | | 2 | 2 | 12 |
| Morgan, Ala. | Company barracks | 2 | 1 | 1 | | 4 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | 1 | | 2 |
| | Captains' quarters | 1 | | | 2 | 3 |
| | Lieutenants' quarters | 4 | | 4 | | 8 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters. | 5 | | 2 | 3 | 10 |
| St. Philip, Ala. | Company barracks | 1 | | | | 1 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | | | | | |
| | Captains' quarters | 1 | | | | 1 |
| | Lieutenants' quarters | 3 | | | | 3 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters. | 3 | | | 4 | 7 |
| Crockett, Tex. | Company barracks | | | 2 | 1 | 3 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | | | | 1 | 1 |
| | Captains' quarters | | | | 3 | 3 |
| | Lieutenants' quarters | | | 8 | | 8 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers quarters. | | | 8 | 1 | 9 |
| Rosecrans, Cal. | Company barracks | 2 | | | | 2 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | 1 | | | | 1 |
| | Captains' quarters | 4 | | | | 4 |
| | Lieutenants' quarters | 4 | | | | 4 |
| | Bachelors' quarters | | | | | |
| | Noncommissioned officers' quarters. | 5 | | 4 | | 9 |
| Baker, Cal. | Company barracks | 3 | | | 1 | 4 |
| | Band barracks | | | | | |
| | Colonel's quarters | | | | | |
| | Field officers' quarters | | | | 2 | 2 |
| | Captains' quarters | 6 | | | | 6 |
| | Lieutenants' quarters | 4 | | | | 4 |
| | Bachelors' quarters | | | | 4 | 4 |
| | Noncommissioned officers' quarters. | 7 | | 4 | | 11 |

[a] Two sets of noncommissioned officers' quarters constructed at Fort Pickens in 1907.

| Fort. | Barracks and quarters. | | | | | |
|---|---|---|---|---|---|---|
| | Class of buildings. | Constructed or under construction, June 30, 1907. | Provided from appropriation of March 4, 1907. | To be provided from appropriation of May 27, 1908. | Remaining to be provided. | Total. |
| Winfield Scott, Cal..... | Company barracks.... | 1 | ..... | 2 | 11 | 14 |
| | Band barracks..... | ..... | ..... | ..... | 1 | 1 |
| | Colonel's quarters..... | ..... | ..... | ..... | 1 | 1 |
| | Field officers' quarters. | ..... | ..... | ..... | 6 | 6 |
| | Captains' quarters.... | ..... | ..... | ..... | 12 | 12 |
| | Lieutenants' quarters. | ..... | ..... | ..... | 18 | 18 |
| | Bachelors' quarters.... | ..... | ..... | ..... | 8 | 8 |
| | Noncommissioned officers' quarters. | ..... | ..... | 6 | 16 | 22 |
| Stevens, Oreg..... | Company barracks.... | 2 | 1 | ..... | 2 | 5 |
| | Band barracks..... | ..... | ..... | ..... | ..... | ..... |
| | Colonel's quarters..... | ..... | ..... | ..... | 1 | 1 |
| | Field officers' quarters. | 1 | ..... | ..... | 2 | 3 |
| | Captains' quarters..... | 2 | ..... | ..... | 2 | 4 |
| | Lieutenants' quarters. | 6 | ..... | ..... | ..... | 6 |
| | Bachelors' quarters.... | ..... | ..... | ..... | 4 | 4 |
| | Noncommissioned officers' quarters. | 4 | ..... | 10 | ..... | 14 |
| Worden, Wash..... | Company barracks.... | 4 | 2 | ..... | ..... | 6 |
| | Band barracks..... | 1 | ..... | ..... | ..... | 1 |
| | Colonel's quarters..... | ..... | ..... | ..... | 1 | 1 |
| | Field officers' quarters. | 2 | ..... | ..... | ..... | 2 |
| | Captains' quarters..... | 4 | ..... | ..... | ..... | 4 |
| | Lieutenants' quarters. | 10 | ..... | ..... | ..... | 10 |
| | Bachelors' quarters.... | ..... | ..... | ..... | 5 | 5 |
| | Noncommissioned officers' quarters. | 7 | 6 | ..... | 1 | 14 |
| Casey, Wash..... | Company barracks.... | 3 | ..... | ..... | 3 | 6 |
| | Band barracks..... | ..... | ..... | ..... | ..... | ..... |
| | Colonel's quarters..... | ..... | ..... | ..... | 1 | 1 |
| | Field officers' quarters. | 1 | ..... | ..... | 1 | 2 |
| | Captains' quarters..... | 4 | ..... | ..... | 2 | 6 |
| | Lieutenants' quarters. | 6 | ..... | ..... | ..... | 6 |
| | Bachelors' quarters.... | ..... | ..... | ..... | 4 | 4 |
| | Noncommissioned officers' quarters. | 5 | ..... | 6 | ..... | 11 |
| Ward, Wash..... | Company barracks.... | ..... | ..... | 1 | 1 | 2 |
| | Band barracks..... | ..... | ..... | ..... | ..... | ..... |
| | Colonel's quarters..... | ..... | ..... | ..... | ..... | ..... |
| | Field officers' quarters. | ..... | ..... | ..... | 1 | 1 |
| | Captains' quarters..... | ..... | ..... | ..... | 2 | 2 |
| | Lieutenants' quarters. | ..... | ..... | 4 | 1 | 5 |
| | Bachelors' quarters.... | ..... | ..... | ..... | ..... | ..... |
| | Noncommissioned officers' quarters. | ..... | ..... | 8 | ..... | 8 |

The most urgent need in the matter of barracks and quarters for the coast artillery up to this time has been for company barracks and for noncommissioned staff officers' quarters. The appropriation of $2,139,060 made last year was, by an understanding with the chairman of the sundry civil committee, intended to build principally barracks and quarters for the enlisted men and a few bachelor buildings for officers where the approved scheme contemplated that they should be constructed, the plan being to provide first for the enlisted men and to have the officers wait until another appropriation. The principal need, therefore, for the next year will be to provide officers' quarters at the posts which have been enlarged by the construction of barracks, but for which the necessary additional officers' quarters have not been provided.

**Requirements for next year.**

After having gone over each post very carefully, taking into consideration the quarters already constructed, those under construction, and those for which allotments have been made, the Chief of Coast Artillery is of the

opinion that the following should be estimated for during the next year. It is believed that the cost will be in the vicinity of $1,400,000. This estimate is based roughly on such figures as have been obtainable by the Chief of Coast Artillery as to the cost of construction and includes the cost of plumbing, heating, and lighting. The detailed estimate, of course, will have to be prepared by the Quartermaster-General.

| Posts. | Quarters recommended to be provided. | | | | | | |
|---|---|---|---|---|---|---|---|
| | Company barracks. | Band barracks. | Field officers'. | Captains'. | Lieutenants'. | Bachelors'. | Noncommissioned staff officers'. |
| Fort McKinley | | | | | | | 4 |
| Fort Williams | | | 2 | 4 | | | 4 |
| Fort Strong | | | | | | | 2 |
| Fort Andrews | 1 | 1 | | 4 | 2 | | 4 |
| Fort H. G. Wright | | | | 2 | 2 | | |
| Fort Hamilton | | | 1 | 4 | 2 | | |
| Fort Hancock | | | | | | | 2 |
| Fort Du Pont | | | | 4 | | | 4 |
| Fort Howard | | | | | | 1—4 | |
| Fort Washington | | | 2 | | | | 2 |
| Fort Monroe | | | | 2 | 8 | | 8 |
| Fort Caswell | | | | 1 | 3 | | |
| Fort Taylor | 2 | | | 4 | 4 | | 10 |
| Fort Barrancas | | | | | | | 2 |
| Fort Morgan | | | | 2 | | | 4 |
| Fort Crockett | 1 | | 1 | 3 | | | |
| Fort Baker | 1 | | | | | 1—4 | |
| Fort Winfield Scott | 4 | 1 | 4 | 4 | 6 | 1—8 | 10 |
| Fort Worden | | | | | | 1—5 | |
| Total | 9 | 2 | 10 | 34 | 27 | 4 | 56 |

INSULAR POSSESSIONS.

Barracks and quarters, insular possessions.

The need for barracks and quarters for coast artillery troops at Corregidor and Grande Islands, Philippine Islands, and at Honolulu, is urgent; in fact, far more urgent than the need of additional barracks and quarters for coast artillery troops in the United States. More rapid progress has been made in the completion of the fortifications authorized heretofore for those places than had been anticipated, and the situation now confronting the War Department of providing for the care and preservation of the armament is serious. With the completion of the other batteries now under construction, this condition will become worse and relief can not be obtained until barracks and quarters are provided. The armament completed or to be completed before the close of the present fiscal year on Corregidor Island will require 10 companies for its service; that on Grande Island, 4 companies; and that at Honolulu and Pearl Harbor, 4 companies. Due to the lack of available funds for the construction of quarters, it has been possible to station but one company of coast artillery on Corregidor Island and but one company on Grande Island.

Failure to obtain funds at this session of Congress will mean that for the next three years these defenses will be in a state of almost complete unpreparedness for war, due to the lack of personnel to man the armament and receive proper training in handling the same. The distance of the Philippine Islands from the United States renders it

improbable that sufficient time will be available when a war appears imminent and before its outbreak to enable coast artillery troops sent from the United States to reach these islands. For this reason it is considered useless to install fortifications in the Philippine Islands unless a sufficient garrison of coast artillery is maintained there at all times to fully man them.

Most urgent necessity.

It is therefore recommended that Congress be asked to provide at its next session for a 10-company post on Corregidor Island, Philippine Islands, a 4-company post on Grande Island, Philippine Islands, and a 4-company post at Honolulu, Hawaii; and it is further recommended that in the hearings before the congressional committees the urgency of the early commencement of this work be pointed out and Congress be asked to make the appropriation for this purpose available immediately upon the approval of the act of appropriation.

## INSTRUCTION.

### BOATS FOR COAST ARTILLERY SERVICE.

Mine planters for home ports.

The four mine planters, *Hunt*, *Knox*, *Armistead*, and *Ringgold*, have been utilized during the past year for instruction work in mine planting at the School of Submarine Defense at Fort Totten, N. Y., the Coast Artillery School at Fort Monroe, Va., and in the various artillery districts along the Atlantic and Gulf coasts.

The act of May 27, 1908, appropriated $175,000 for a planter for the Pacific coast. This latter planter will be assigned for instruction work in submarine mining to San Francisco and San Diego harbors, and the planter provided by the act of March 2, 1907, to the Columbia River and Puget Sound.

The four planters on the Atlantic and Gulf coasts and the two on the Pacific coast will be sufficient for instruction purposes in time of peace. In time of war these planters will be assigned to particular artillery districts for planting the mines according to the approved projects.

Auxiliary mine planters for home ports.

With the knowledge that Congress could never be expected to provide sufficient mine planters to enable the whole mine defense of the United States to be planted promptly on the outbreak of war, the joint army and navy board, upon the recommendation of the Chief of Artillery, adopted the following resolution on July 1, 1907:

*Resolved*, That when, upon the outbreak or threatening of hostilities, the vessels of the Light-House Establishment have been turned over to the Navy Department as contemplated by existing war plans, the Secretary of the Navy should place at the disposal of the War Department such light-house tenders as the Secretary of War may request, for temporary duty in laying out the harbor-defense mine fields, the said employment to terminate with the initial planting of the mines and not to continue for the purpose of maintenance of the fields.

This was approved by the Secretary of Commerce and Labor, the Secretary of the Navy, and the Secretary of War; and the chairman of the Light-House Board and the Chief of Coast Artillery were authorized to arrange the details for utilizing these vessels for mine-*planting purposes* under the conditions referred to in the resolution.

As a result, 31 light-house tenders, or such vessels as might hereafter take their places in the various light-house districts, were selected for assignment to the various artillery districts. Besides these light-house tenders, 9 of the larger harbor vessels of the Quartermaster's Department which are particularly suitable for service in planting mines, were recommended by the Chief of Artillery for this work in time of war under the same limitation as to the period of use referred to in the case of the light-house tenders; their temporary use for this purpose has been agreed upon by the departments concerned.

The necessary mine-planting gear, consisting of cable drum frames, mine and anchor davits, snatch blocks, differential pulleys, tripping hooks, and the small parts necessary to install them readily on the light-house tenders and quartermaster boats, are being supplied by the torpedo depot from funds now available, and will be kept stored in the mine storehouses in artillery districts where these boats are to be used. The 6 mine planters, and 31 light-house tenders and 9 quartermaster boats equipped with mine-planting gear, together with the artillery district boats, will give all of the large boats necessary for the prompt planting of mines in all fortified harbors in the United States in case of war.

**Mine planters for insular possessions.**

The act of May 27, 1908, appropriated $181,000 for 1 planter and 2 launches and $193,000 for 1 planter and 6 launches for instruction purposes in the Hawaiian and Philippine Islands, respectively; the matter of providing auxiliary mine planters for use in these islands in case of war is now under consideration by the War Department.

**Distribution-box boats.**

The Quartermaster's Department is now building thirty-two (32) 32-foot gasoline launches to be used as distribution-box boats. This number will permit the assignment of 1 of these boats to each artillery district for instruction purposes, with 2 for the Hawaiian Islands and 6 for the Philippine Islands. These launches are specially designed for their work, being supplied with the apparatus necessary for handling the distribution boxes. The 24 distribution-box boats for the United States will be sufficient for practical instruction in submarine mining, but in time of threatened hostilities it will be necessary to supplement them in some of the more important harbors by the temporary use of such boats as can be found in these places and rendered suitable for such work.

**Artillery district boats.**

As stated in the last report of the Chief of Artillery, $725,000 was appropriated in the act for the support of the army for the fiscal year 1907–8 for artillery boats. Contracts have been entered into by the Quartermaster's Department for furnishing 2 artillery district boats on the Pacific coast and for 8 on the Atlantic and Gulf coasts. This number, together with the 5 boats of this general character furnished last year and the other boats now assigned to artillery service in the various harbors, is considered to be sufficient for the following needs of the coast artillery:

First. To render artillery practice possible with targets that are towed at such a rate as may be expected in action.

Second. To render possible daily vessel tracking drill, especially at night with use of searchlight, and frequent subcaliber practice under the same conditions as stated above.

Third. To provide means for drill in planting mines and for other instruction in handling and using submarine defense material at posts where this material is on hand and where a regular torpedo planter is not available.

Fourth. To transfer artillery material and personnel between posts within an artillery district for repair work, inspections, and drill.

Artillery launches.

In addition to the present number of launches which are assigned to the artillery districts for coast artillery work, the Quartermaster's Department is now having constructed from the above-mentioned appropriation and from funds allotted from "Army transportation, 1908–9," 3 steam 60-foot launches for the Pacific coast, and 3 steam and 4 gasoline 60-foot launches for the Atlantic and Gulf coasts.

Passenger and freight steamers.

Besides the above boats, which are required for coast artillery work proper, the Quartermaster's Department maintains a considerable number of steamers for transportation and freight purposes in the different fortified harbors. The coast artillery is peculiarly dependent on such service due to the location of its posts. In years past these posts were quite near the cities, but the increased range of the armament of ships and forts has forced the location of fortifications to be further removed from the cities and in many cases on islands and points of land where boats are the only means of transportation and supply. The Quartermaster's Department is improving this service year by year, and it is hoped that in a few years an entirely satisfactory service in this respect will be maintained.

## TARGET PRACTICE FOR COAST ARTILLERY.

Results for 1907.

The results of service target practice with 8-inch, 10-inch, and 12-inch guns for the calendar year of 1907 show improvement over the past three practice years, as will be seen from the plate on page 30. The results of practice with guns below 6 inches in caliber were unsatisfactory. The reasons are thought to be those pointed out in my last annual report; first, that the carriages of these guns are not equipped for the use of quadrant elevations, and, second, that in many cases the handling of these guns in target practice has been faulty. All carriages are now being equipped with quadrant elevation scales and with elevating and traversing gearing as rapidly as satisfactory designs can be completed. With a view to improving the target practice of rapid-fire guns, a memorandum on the method of fire control for these guns has recently been issued to the coast artillery.

Targets.

The target used during 1907 for heavy guns was the hypothetical target representing a battle ship. This target was 8 yards high by 145 yards long by 25 yards beam. Since this target was always towed more or less broadside to the battery firing, it was a comparatively simple matter for the gun pointer of a gun battery to cause all of the shots from his gun to fall within limits of the length of this target. Lateral misses on the old target, therefore, were practically unknown with gun batteries.

With a view to leading up to the use of a material target upon which hits can be actually counted, the old battle-ship target was re-

placed by a hypothetical target 30 feet high by 60 feet long at the beginning of the practice year of 1908. This target is represented by two pyramidal targets towed 60 feet apart. Its additional height of 6 feet over the old target has increased the danger space, and its reduction in width to 60 feet has made the problem for the gun pointer more difficult. Already seven reports showing 100 per cent of hits on this target have been received. This new target has increased the interest and improved the work of the gun pointers.

A material target for heavy guns, 30 feet high by 60 feet long, is being developed by the artillery board at Fort Monroe, Va., and, if satisfactory, steps will be taken to provide the service with this target, possibly next year, if funds will allow.

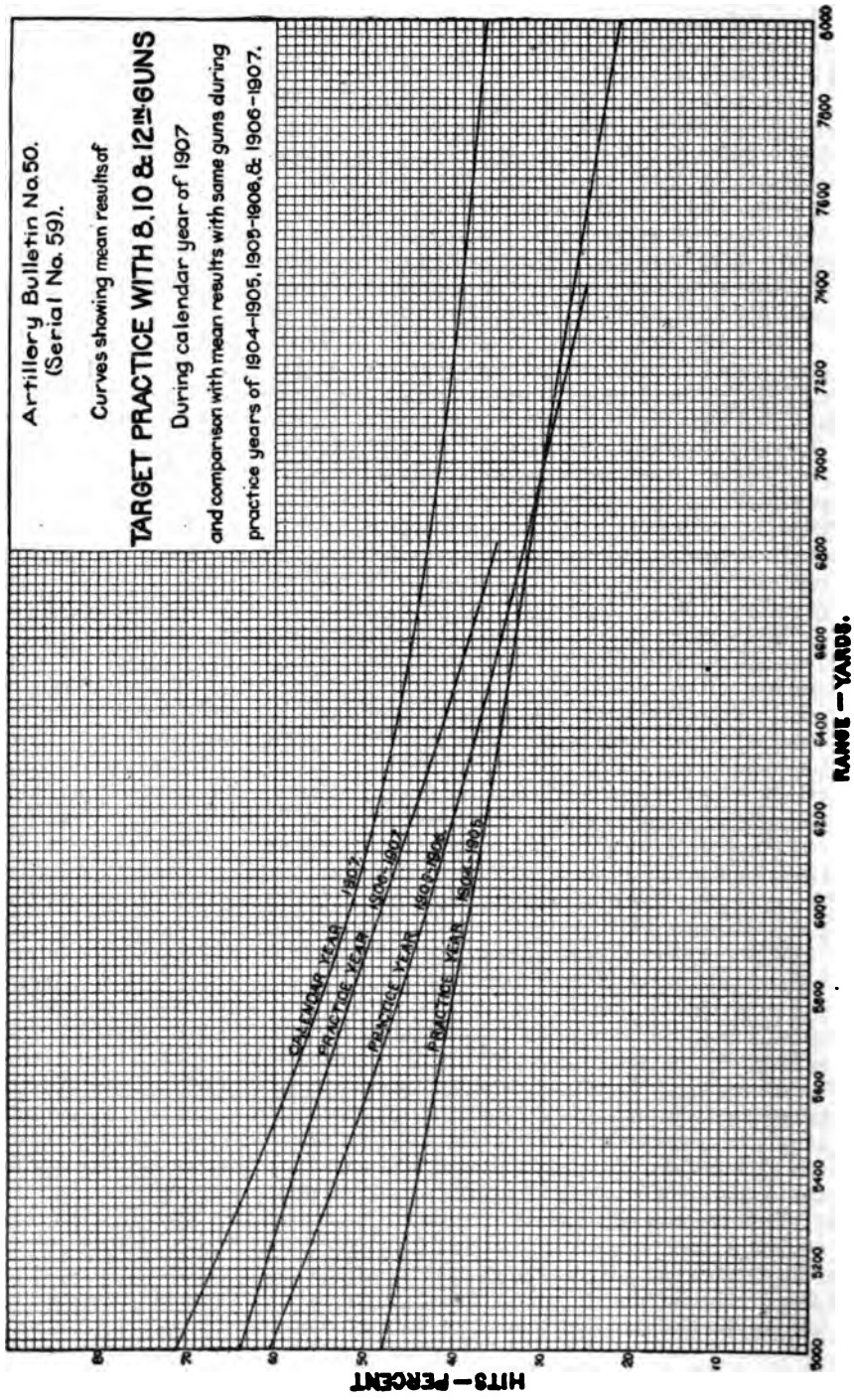
Blending.

Since my last annual report was submitted, blending powder for target practice has been made mandatory. This was done after a consideration of the results obtained with and without blending by battery commanders throughout the service. A study of these results clearly indicated that blending of powder for target practice increased its uniformity. The results from 37 practices with unblended powder and 24 practices with blended powder were tabulated. Trial shots alone were taken in determining mean errors. The mean error for 8-inch, 10-inch, and 12-inch guns with unblended powder was 52.1 yards, while the mean error for these guns with blended powder was 39.6 yards.

The reports of a great many company and fire commanders were favorable to blending. A great many were unfavorable. The objection given to blending was, generally, that it was not a service condition. No method was prescribed, and each battery commander blended in his own way. The result was that numerous methods of blending were used, and many of them were cumbersome and excessively long. It is thought that a great many company commanders considered blending impracticable in service because the process was too long and complicated. A simple method, and one uniform for the whole service, is prescribed in the latest coast artillery instruction order. This method reduces the time of blending to a minimum and gives a thorough blend.

While orders at present in force do not permit blending different lots of powder and only prescribe that powder to be used for target practice shall be blended, it is believed that a battery commander should blend his powder periodically, not too often, but frequently enough to insure uniformity of all powder to be used in a practice or in action. Moreover, where a great many lots of powder for the same battery are on hand, it is evident that, in order to get the requisite number of rounds for an action, these lots will have to be blended before hostilities begin, in order to obtain uniformity in velocities of all charges used.

This matter of blending powder periodically, and of blending different lots for service, will be taken up by the Chief of Coast Artillery with a view to the issue to the coast artillery service of proper regulations to cover blending of powder for target practice, and under service conditions as indicated above.


Artillery Bulletin No. 50.
(Serial No. 59).
Curves showing mean results of
TARGET PRACTICE WITH 8, 10 & 12IN GUNS
During calendar year of 1907
and comparison with mean results with same guns during
practice years of 1904-1905, 1905-1906, & 1906-1907.
CALENDAR YEAR 1907
PRACTICE YEAR 1906-1907
PRACTICE YEAR 1905-1906
PRACTICE YEAR 1904-1905
HITS — PERCENT
RANGE — YARDS.

## MILITIA.

### JOINT ARMY AND MILITIA COAST DEFENSE EXERCISES.

These exercises, practically as proposed in my last annual report and as outlined in Circular No. 17, War Department, 1907, were held in nearly every artillery district on the Atlantic, Gulf, and Pacific coasts in 1907; and were held again in May and June of this year, in several cases, by the same organizations that participated in them the year before. The reports of the exercises of last summer and fall, made by regular and militia officers who participated or who were detailed to observe them, were collated and published by the War Department, and copies sent out to those interested.

Based on the experience thus gained, General Orders, No. 44, War Department, 1908, was issued, prescribing the general features of the exercises for this year but leaving, as before, the details of the exercises to the local commanders; many of the difficulties of the previous year have been avoided.

In May and June of this year exercises were held in 11 artillery districts on the Atlantic and Gulf coasts, as follows: Boston, Narragansett Bay, New London, eastern New York, southern New York, Baltimore, Cape Fear, Charleston, Savannah, Tampa, and Mobile.

Delaware and North Carolina participated for the first time this year, the latter at Fort Caswell from June 1 to 10, and Delaware at Fort Du Pont from August 1 to 8, and the District of Columbia militia goes this year, as last, to the Potomac forts.

Every seacoast State, except Virginia and Texas, has thus had its troops in the exercises of at least one year. The reports of the exercises of May and June of this year have not all been received, and a comparison of the work of the two years and the progress made by the militia which took part in both can be made only in general terms.

From the experience of the two seasons and based on the detailed reports of last year and those received of this year, the following conclusions are warranted:

Conclusions.

1. That militia organizations participating have generally shown great interest in the work and in several cases have decided to continue it to the exclusion or curtailment of other military duties.

2. That progress has been all that could reasonably be expected when the nature of the work and the many difficulties in the way of this progress for most of the year, when the militia can not have access to the guns, are considered.

3. That assistance must be given the militia by the adequate supply of portable coast artillery material, plotting boards, angle measuring instruments, loading machines, etc., in order that the work can be carried on in the armories. The militia organizations can not be expected to increase in efficiency or sustain their interest in this work unless proper tools are furnished; and the appropriation for this purpose of the past year should be supplemented by others until every organization is adequately supplied. In this connection, it should be kept in mind that but two weeks of the entire year are spent at the forts and that the work for the remainder of the year is practically confined to the armories of the organizations; that those two weeks should be regarded as the culmination of the work of the year and that no time should be spent at the guns in any instruction that can by any possibility be given at the armories.

4. That as independent elements of defense are, under the scheme as outlined, to be eventually intrusted to the militia, its officers and men must attain a standard commensurate with the importance of the element so intrusted to them, and must demonstrate their fitness as the officers and men of the regular establishment are now required to do.

In this connection the following extract from a report of joint exercises of this year, by an officer detailed from the Army War College as an observer, will be of interest, particularly so much of it as gives the views of a field officer of militia who has been engaged in the coast artillery work of the militia for some years past, and who is as well fitted for it, perhaps, as any other in the national guard:

> In the same way the duties of the officers have been systematized and so simplified and reduced to a science that they seem to be in general merely matters of supervision. It may, therefore, appear to be a very simple thing to perform the duties of a battery commander or fire commander, and with well trained organizations it is a very simple thing to exercise a general supervision and give the few simple commands which are laid down in the text-books and can readily be memorized and applied. But to be a competent officer a man must be capable of being an instructor. He must know in detail the duties of all his subordinates of whatever rank. Any intelligent man could step into a battle or fire commander's station, and in a few hours, under competent instruction, learn to concentrate or scatter the fire of his batteries, direct, after a manner, his searchlights, and, if he made a show of self-confidence, apparently operate the system efficiently; but to do so intelligently he must be the master of the details of all the duties, and of all the apparatus that go to make up his command.
>
> While the duties of a battle commander or a fire commander may at first sight seem very simple, they will be found, when one understands them more thoroughly, to be quite complex and to require good judgment, quick, decisive action, and a thorough knowledge of the terrain and hydrography of the district and the different elements of the defense, including the mine command and the land defense. They necessitate, also, some knowledge of ship construction and naval tactics, armor penetration, and other technical matters.
>
> A colonel of one of the state corps of coast artillery, who acted as commander of the first battle command on the night of June 27, during the attack by the fleet, stated to me next day that he realized as never before the complexity of the battle command and the multiplicity of duties falling on the battle commander in an attack of this kind, and the necessity of a familiarity with the duties of the position and with the channels and sectors of fire of the batteries of the different fire commands.

In general, the exercises have demonstrated that valuable aid can be given by the militia organized as coast artillery reserves and supports and, with the impetus given them by the legislation of the past year, I look for a rapid advance in efficiency in the joint exercises of next year and those following.

## THE COAST ARTILLERY SCHOOL.

**Personnel.**

Of the 33 officers ordered to the school, 26 reported on August 28, 1907, and entered the school. Of these, 1 officer was transferred to the infantry, 2 resigned, and 1 was retired. The remaining 22 graduated upon the completion of the course.

The class in the course for master gunners in the department for enlisted specialists numbered originally 20 men, of whom 2 were relieved and 18 completed the course. Of the latter, 12 received certificates of proficiency and were appointed master gunners on June *30, 1908.*

Course of instruction.

The school during the past year has been conducted as prescribed in General Orders, No. 178, War Department, series of 1907. The instruction in each department has been thoroughly practical. For the officers' departments the first year or "regular course" has been pursued. This course embraces a thorough practical training in such work as is daily required of coast artillery officers in the performance of their prescribed duties throughout the service. Its object is to fully equip officers for the immediate application of such training in the use, care, and efficient operation of the several elements of our coast defenses, and it includes courses in artillery proper, artillery defense, explosives, electricity and mine defense, power and power transmission.

For the enlisted men's department, the course has been limited during the past year to the training of candidates for the position of master gunner, and has been both theoretical and practical. As far as possible practical work has been extended in all subjects. In the first part of the course, where mechanics (including elementary algebra, geometry, trigonometry, and mechanics) requires theoretical instruction, it has been limited to that necessary to an understanding of the subjects that follow.

The course includes, in addition to mechanics mentioned above, instruction in the practical construction and use of range tables, in artillery material, in mechanical drawing, and in photography.

Consolidation with the school of submarine defense.

With the school year commencing on September 1, 1908, the actual consolidation of the school of submarine defense, heretofore conducted at Fort Totten, N. Y., with the artillery school at Fort Monroe, Va., is effected. The regular course and the advanced course for officers will be pursued at the same time and in the same departments by classes now under orders to report August 28, 1908. The class for the advanced course will consist of 10 officers, 6 of whom have been selected from the coast artillery at large and 4 from the class just completing the regular course. For the regular course the class will consist of 30 officers.

In the enlisted men's department the three classes of electrical specialists, mechanical specialists, and artillery specialists will commence their work on October 1.

The school buildings.

The new school building is at present (July 20) well above the foundation, and satisfactory progress is being made in its construction. Special attention is being paid to advancing the work on the school building for enlisted specialists, in order that it may be ready for occupancy at the earliest practicable date.

## SCHOOL OF SUBMARINE DEFENSE.

Personnel.

The class of student officers graduating this year consists of seven officers. On September 28, 1907, 6 enlisted men completed the course in the electrician sergeants' department, on October 25, 1907, 3 enlisted men, and on June 20, 1908, 50 enlisted men—a total of 59 enlisted men. These men were given certificates of proficiency by the school board, and were reported by the commandant to the War Department for appointment as electrician sergeants under the provision of paragraph 28, General Orders, No. 116, War Department, 1906.

Under the provisions of paragraph 3, General Orders, No. 77, War Department, 1907, theoretical examinations of applicants for appointment as engineers were held at various places throughout the country on June 1, 1907, and December 2, 1907, notice of the examinations having been previously published.

Seventy-seven enlisted men reported for the examinations. The theoretical examinations were passed by 51 candidates; 50 were appointed as engineers, Coast Artillery Corps, and assigned to various districts for duty. One civilian passed the preliminary examination and was appointed engineer—total, 51.

Under the provisions of paragraph 3, General Orders, No. 77, War Department, 1907, 93 enlisted, divided in five classes, and received the prescribed course for firemen, Coast Artillery Corps, during the school year; 76 men were appointed to that grade and assigned to various districts for duty.

**Officers' school.**

The only change in the officers' school during this year was the division of the department of electricity, mines, and mechanism into two departments, viz, the department of electricity and mechanism and the department of mines. The division of the work proved very satisfactory.

The programmes of the department of chemistry and explosives and the department of electricity and mechanism as arranged by the school board and approved by the Chief of Staff August 2, 1904, were followed throughout the year. The department of mines was organized late in the year, and the programme was approved by the school board, but was not forwarded for the approval of the Chief of Staff because the approved programme for mine instruction was not altered but merely amplified, and the amplifications were tentative, and it was not certain how far they could be carried out.

As a result of the changes the general scheme of instruction has been considerably broadened. Every officer has been required to practically do everything that an officer should know as to planting mines. Each officer has taken the work in the casemate and the loading room, and each officer has actually planted and taken up a group of mines. The work has been exceedingly practical and the results were excellent.

**Enlisted men's division.**

The change in the enlisted men's division consisted in the addition thereto of a class of firemen and the course prescribed for the practical examination of candidates for engineers.

This division has been carried on very successfully this year under adverse circumstances. The total number of men passing through the school during the year was 215, as follows:

51 engineers examined and passed;
59 electrician-sergeants graduated;
76 firemen passed;
29 failed to pass—12 in electrician-sergeants' class and 17 in firemen's class.

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In addition to this the papers of 46 electrician-sergeants, second class, were examined for promotion and 41 passed.

## ARTILLERY BOARD.

Composition.

The artillery board consists of one major, who is also director of the department of electricity and mines, Coast Artillery School; three captains, one commanding a 12-inch gun battery during the major portion of the past fiscal year, one a 10-inch gun battery, and one a mortar battery, each of whom retains administrative control of his company; one captain for the consideration of ballistic questions only, and who is also instructor in the department of artillery and gun defense, Coast Artillery School; one first lieutenant, who is also recorder of the board.

Subjects considered.

Various important matters have been referred to the board in the past year, some of them involving extensive experimentation and tests. Among the subjects considered are the following:

Semple tracers for the coast artillery.

Type of station for the battery commander, at the battery.

Reserve lights for the emplacements.

Sound-proof booths for rapid-fire batteries.

Consideration of a new type telautograph, typewriter telegraph, and subtarget gun companies' autocheck range-transmitting device.

Plotting for subcaliber practice in the case of long base lines.

Computation of log. tangents, in degrees and hundredths degrees.

Description of use of new mortar equipment.

Development and test of pantograph set forward ruler.

Instructions for gun pointers at subcaliber practice.

Stockwell's range correction tables.

Range scales corrected for curvature and height of sight furnished for all batteries in the United States and Philippine Islands.

Computation of range tables abridged and unabridged.

Deflection device for mortars.

Illumination for gun sights by electricity.

Acetylene lamps for emplacements.

New design of atmosphere scales.

Morris tube for coast artillery service.

Time range relation boards, design submitted.

Lights on rapid-fire gun carriages.

Hand set for battle commander's station.

New chevrons for special grades, coast artillery.

Character of graduated scales to be furnished by the Ordnance Department.

The revision of Coast Artillery Drill Regulations.

Report of test of Barr and Stroud range finder.

Safety device for firing mortars by electricity.

Inaccuracy of time interval recorders.

Plans for training state militia for coast artillery.

The use of wireless telegraph and its relation to the coast artillery service.

The sponging out of bores.

Dismounting of mortars.

Slow motion device for traversing 12-inch gun carriages.

Visual signals for coast artillery.

Permanent targets for trial shots.

Competitive test of depression position finders.

Report on device for determining ranges by solving triangles by means of slide rule. (Range rod.)
Revision of coast artillery instruction order.
Material for harbor charts.
New designs for range and deflection boards.
Signal kits for coast artillery.
Revision of general orders.
Consideration of the new Lewis depression position finder.
Consideration of reports of Ordnance Department on mounts for telescope.
Type distribution-box boat.
Experimentation in the development of a material target for the coast artillery.
The preparation of examinations for certain rated positions.
Recommendations on certain memoranda on target practice with rapid-fire guns and on observational range corrections.
Specifications for special camera to be used in taking overs and shorts.
Lighting system for D. P. F. instruments.
Inaccuracy of mortar fire.
Perforation of armor.
Seating of projectiles.
Automatic range corrector.
Universal plotting board for mortars.
The power equipment of mining casemate.
The preparation of a general order governing mine practice.
Manual for mortars.
Magneto firing device.
The new Bausch-Lomb-Seagmuller D. P. F. instrument.
Competitive test of searchlights.
Recommendation on the organization of the battle, fire, and mine commands.
Competitive test of self-contained horizontal range finders.

## THE TORPEDO BOARD.

Duties.

The torpedo board during the past year has supervised the purchase of submarine mine material and its issue from the torpedo depot; it has conducted various experiments in matters connected with submarine mine apparatus, resulting in the adoption of improvements in the operating board, a starting switch for casemate motor generators, a new form of compound plug, together with a fuze can suitable for firing wet gun cotton, and the necessary mine planting gear to be installed on improvised planters.

The board has also made report and recommendation on various subjects referred to it by the Chief of Coast Artillery, among the principal ones being the advisability of adopting various devices submitted by inventors and intended to be used in submarine-mine defense; the revision of the specifications of submarine-mine material; the revision of those parts of the Provisional Manual for Submarine Mining, 1906, affected by the changes made in the operating board; the preparation of a pamphlet of instruction for mine companies; the preparation of detailed instructions for testing submarine-mine cable; the preparation of instructions for the use of electrician-ser-

geants in the care, preservation, and operation of the 36-inch portable searchlight sets; the scope of examination to be given candidates for positions of casemate electricians, chief loaders, and chief planters.

Discontinued.

The board ceased to exist as such on the 1st day of August, 1908, per General Orders, No. 27, War Department, 1908, due to the consolidation of the School of Submarine Defense with the Coast Artillery School at Fort Monroe, Va.

## THE TORPEDO DEPOT.

Duties of disbursing officer and operations of depot.

The disbursing officer of the torpedo depot, acting under the direction of the torpedo board, has purchased during the year, and issued under the rules prescribed by the Secretary of War, the necessary material of the new system for the equipment of the casemates and mine fields of 8 of the 41 posts recommended by the National Coast Defense Board for submarine-mine defense in the United States and one in the insular possessions. This makes a total of 37 posts in the United States for which material of the new system has been purchased.

With the money available for the fiscal year 1908–9, it is proposed to continue the purchase of submarine-mine material for the United States, and also to completely equip 2 posts in the insular possessions with the money available for the coming fiscal year. There will remain 4 posts in the United States and 5 in the insular possessions recommended for submarine-mine defense for which no provision has been made.

## THE FIELD ARTILLERY.

As before stated, the Chief of Artillery on July 1, 1908, ceased to exercise supervision over the field artillery and thereafter became the Chief of Coast Artillery. This report, therefore, is the last which I will submit upon the field artillery.

Benefits resulting from separation from coast artillery.

The separation of the two branches of artillery, permitting the officers of each to devote their time and energy to one branch only and the organization of each branch in the manner best adapted to the performance of its special functions, has already resulted in materially increasing the efficiency of both branches. The reorganization of the field artillery upon the same basis as the other branches of the mobile army is bringing about a closer cooperation between these branches and that understanding of their powers, limitations, and mutual interdependence that is so essential to the proper development of the mobile army as a whole. This reorganization was effected under General Orders, No. 118, War Department, May 31, 1907, and since that date the field artillery has been for the first time in our history upon a proper footing. The short time that has elapsed since that date has been sufficient to show that the beneficial effects that were expected to result from this reorganization are being realized, and that in all its essential features the present organization is the correct one. It allows for a sufficient staff and furnishes strong tactical units which conform to the requirements of modern war. It can be adapted to either light, mountain, heavy, or horse artillery, and has already proved itself suited

to good administration and thorough instruction. Possibly future experience may develop the need of minor changes, but it may be safely predicted that no radical changes will be required.

There are, however, certain provisions which field-artillery officers consider still requisite, and I take this occasion to recommend that they receive the careful consideration of the War Department. They are as follows:

Need of a directing head.

1. The provision of a directing head who would be charged with the maintenance of the efficiency of the personnel, and, in conjunction with the chiefs of the supply departments concerned, the efficiency and sufficiency of the matériel. The recent improvements in the matériel and the extension of the rôle of the field artillery, giving to the work of that arm a more special and technical character, have rendered the need of such a head more urgent now than under former conditions. It is believed that such a head would go far toward insuring the maintenance of a high standard of efficiency throughout the field artillery.

Ammunition supply.

2. A careful consideration of methods of ammunition supply. The consumption of ammunition during the Russo-Japanese war exceeded all expectations, even though the guns used were not rapid-fire guns; in some cases the estimated campaign allowance was fired in a single engagement. Guns without ammunition are worse than useless, and, therefore, the entire world is now engaged in trying to devise a system of adequate supply. In our service there is no provision whatever for a second line of ammunition, the present supply consisting of only the first line or what the batteries carry with them on taking the field—an amount that can be fired away in half an hour. It is therefore of the greatest importance that provision be made for reserve ammunition. Caissons, not guns, constitute the true artillery reserves. The light ammunition column for field artillery is the first available reserve for that arm, and should be manned by a field artillery personnel. It should be organized, should use the same caissons as the batteries, and should be prepared to refit the fighting batteries in personnel, horses, and matériel. Without such provision, the efficiency of the modern rapid-fire gun is so reduced as to make it comparable with the obsolete type of gun. We should not enter a campaign without providing at least 1,000 rounds per gun. The first line (with the guns) already provides for 358 rounds. The second line of the same mobility as the guns would carry about 318 rounds, leaving the balance at the base or in the heavy ammunition trains.

Depot batteries.

3. Depot batteries, to come into existence in time of war, for the supply of men to replace the losses at the front.

Lighter gun for horse artillery.

4. The advisability of providing a lighter gun for the horse artillery than the present 3-inch field gun.

Heavier guns for one or two regiments and personnel therefor.

5. The necessity for equipping one or more regiments with heavy field guns and others with howitzers. The increased use of cover in modern warfare demands guns and howitzers of sufficient power to destroy this cover, or at least to render it untenable. The necessity for the provision of such armament has been recognized by foreign powers and its appearance may be expected in every battlefield in

the future. The Ordnance Department, keeping abreast of the development in other armies, has designed a complete system of field artillery which includes types of all the necessary calibers of both light and heavy field guns and howitzers, but as attainment of efficiency in modern field artillery work requires long training and can not be expected with a hastily organized personnel, it is of great importance that the personnel for this armament should be available as soon as the armament is completed and ready for service.

School of fire.

6. The advisability of establishing in our service a school of fire and of allotting to that school a generous allowance of field artillery target practice ammunition. It is believed that through the medium of such a school, which would be to the field artillery what the School of Musketry is to the infantry, instruction in the conduct of artillery fire would be much more thorough, comprehensive, and uniform than is possible under present conditions.

Accommodations for a full regiment at Fort Sill, Okla.

I renew the recommendation made in my annual report for 1906 that quarters for a regiment of field artillery be provided at Fort Sill, Okla. The advantages of quartering all the batteries of a regiment at the same post are obvious, but at present quarters for a regiment are provided only at Forts Riley, Kans., and D. A. Russell, Wyo. Provision for a regiment at Fort Sill is particularly desirable in view of the fact that this is the finest reservation for field artillery purposes in the United States.

## FIELD ARTILLERY BOARD.

This board has rendered valuable assistance on technical questions, has tested numerous experimental devices, and has conducted most important firing tests. Notably among the latter were those to determine the relative efficiency of a single-type projectile to replace the present shrapnel and high-explosive shell; to determine the effect of artillery fire on shielded batteries, walls, etc., and the efficiency of the service shrapnel at various ranges.

It has also continued its preparation of the Field Artillery Drill Regulations, a new edition of which, embodying the latest work of the board, will shortly appear. In this connection it may be stated that the preparation of the regulations is progressing satisfactorily.

## MOUNTAIN ARTILLERY BOARD.

This board was created August 26, 1907, for the purpose of revising the Drill Regulations for Mountain Artillery.

It is making satisfactory progress, and provisional regulations will shortly appear.

The board has also done valuable work in testing material and in considering various questions connected with this arm.

## PROPER PROPORTION OF FIELD ARTILLERY TO OTHER ARMS.

In closing my last report upon the field artillery I wish to express my conviction that the interests of the national security demand an

increase in the strength of that arm. The wider and more important rôle now open to the field artillery, the admitted futility of looking to the militia for any material number of efficient batteries, the impracticability of forming efficient organizations from raw material after the outbreak of war, and the fact that the present strength of the field artillery is little more than half that required to furnish the proper quota for the mobile army as now organized, all these considerations show the imperative necessity for increasing the strength of this arm.

The present Field Service Regulations prescribe the organization of a division and the strength of the different arms composing it. On the basis therein prescribed, which is that followed by other armies, our infantry and cavalry would provide three and a third divisions of infantry and one cavalry division and would call for six regiments of light and mountain artillery and one of horse, plus the artillery for the extra one-third division (calling for two-thirds of a regiment of artillery). From which it is seen that we are one and two-thirds regiments short of the allowance prescribed by Field Service Regulations for divisional artillery for the army's present strength. But an even graver condition exists—the allowance above noted gives a proportion of about 3.35 guns per thousand bayonets, and it is evident that this amount should be entirely devoted to light, mountain, and horse artillery.

Including heavy field artillery, but not including guns of position, the proportion of guns to infantry varies in France, Austria, Russia, England, Japan, and Germany from about 4.5 to over 6.

Moreover, it must be borne in mind that the militia is deficient in numbers, organization, and training of field artillery as compared with the other arms, and that there is no way of expanding the field artillery. This can only be done by adding guns to batteries, for there is no power to add *a single battery;* but this addition of batteries is the only practicable way to increase the number of our guns, for our batteries already contain fully as many pieces as a captain can efficiently handle. War expansion with a rapid-fire battery must take the form not of adding guns, but of adding caissons to the already existing guns.

It is evident that the only possible means of remedying this condition is an increase of the field artillery. Our army, though small, should be efficient. No army can now be efficient that is as badly deficient in its quota of field artillery as is ours. Each succeeding war shows more clearly than its predecessor the importance of this arm; and every improvement in the gun, its ammunition, or method of fire, makes still more impossible hasty improvization of field artillery.

The minimum allowable amount of field artillery for the army as at present constituted is shown by the following:

*For 3½ divisions of infantry.*—Six and two-thirds regiments of field artillery, manning light and mountain guns (24 guns to the regiment); 3½ regiments of field artillery, manning howitzers and heavy guns (16 guns to the regiment).

*For 1 cavalry division.*—One regiment of field artillery (horse); total, 11 regiments of field artillery.

This would give a proportion of about 4.42 guns to 1,000 bayonets and sabers, which is less than that of all other great powers, and would require an increase of five regiments. In other words, we have a little over half of the amount of field artillery that is absolutely necessary for our small Regular Army.

Very respectfully,

ARTHUR MURRAY,
*Brigadier-General, Chief of Coast Artillery.*

The CHIEF OF STAFF, U. S. ARMY.

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# REPORT OF THE BOARD OF ORDNANCE AND FORTIFICATION.

# REPORT OF THE BOARD OF ORDNANCE AND FORTIFICATION.

WASHINGTON, *November 14, 1908.*

SIR: Under the provisions of the act approved February 24, 1891, the Board of Ordnance and Fortification has the honor to submit, for transmission to Congress, its eighteenth annual report, covering the fiscal year from July 1, 1907, to June 30, 1908.

## CHANGES IN PERSONNEL.

There have been two changes in the personnel of the Board. Brig. Gen. Alexander Mackenzie, Chief of Engineers, was retired from active service on May 25, 1908, and his place on the Board was taken by Brig. Gen. William L. Marshall, Chief of Engineers, detailed by paragraph 25, Special Orders, No. 176, July 30, 1908. Col. George F. E. Harrison, Coast Artillery Corps, was relieved, and Col. Montgomery M. Macomb, General Staff, was detailed as a member by the same order. Maj. Lawson M. Fuller, Ordnance Department, was relieved, and Capt. Sherwood A. Cheney, General Staff, was detailed as recorder by paragraph 26, Special Orders, No. 176, July 30, 1908.

The Board now consists of the following-named officers: Maj. Gen. J. Franklin Bell, Chief of Staff, president; Brig. Gen. William Crozier, Chief of Ordnance; Brig. Gen. Arthur Murray, Chief of Coast Artillery; Brig. Gen. William L. Marshall, Chief of Engineers; Col. Montgomery M. Macomb, General Staff; Lieut. Col. Erasmus M. Weaver, Coast Artillery Corps, and Gen. Thomas J. Henderson, civilian member, with Capt. Sherwood A. Cheney, General Staff, recorder.

## LEGISLATION.

The only special legislation affecting the Board is contained in the fortifications appropriation act approved May 27, 1908, making appropriation for continuing the work of the Board, as follows:

To enable the Board to make all needful and proper purchases, experiments, and tests to ascertain, with a view to their utilization by the Government, the most effective guns, small arms, cartridges, projectiles, fuses, explosives, torpedoes, armor plates, and other implements and engines of war, and to purchase or cause to be manufactured, under authority of the Secretary of War, such guns, carriages, armor plates, and other war material as may, in the judgment

of the Board, be necessary in the proper discharge of the duty devolved upon it by the act approved September twenty-second, eighteen hundred and eighty-eight; to pay the salary of the civilian member of the Board of Ordnance and Fortification provided by the act of February twenty-fourth, eighteen hundred and ninety-one, and for the necessary traveling expenses of said member when traveling on duty as contemplated in said act; for the payment of the necessary expenses of the Board, including a per diem allowance to each officer detailed to serve thereon, when employed on duty away from his permanent station, of two dollars and fifty cents a day; and for the test of experimental guns, carriages, and other devices procured in accordance with the recommendation of the Board of Ordnance and Fortification, fifty thousand dollars, the expenditure of which shall be made by the several bureaus of the War Department heretofore having jurisdiction of the same, or by the Board itself, as the Secretary of War may direct: *Provided*, That before any money shall be expended in the construction or test of any gun, gun carriage, ammunition, or implements under the supervision of the said Board, the Board shall be satisfied, after due inquiry, that the Government of the United States has a lawful right to use the inventions involved in the construction of such gun, gun carriage, ammunition, or implements, or that the construction or test is made at the request of a person either having such lawful right or authorized to convey the same to the Government.

## GENERAL OPERATIONS.

The statute requires the Board to annually submit a statement of its general operations. Brief statements are made under appropriate headings of the objects for which allotments have been made.

Probably the most important work undertaken was the competitive test of depression position finders, conducted at Fort Wadsworth by the Artillery Board. This test resulted in the determination to the entire satisfaction of the Board of the relative merits of the several instruments presented, but a protest by one of the competitors delayed the awarding of the contract for supplying the required instruments. The questions at issue have recently been settled and contracts are about to be made.

The subject of wire-wound guns, which has been before the Board for several years, has finally been settled by the recommendation, approved by the Secretary of War, "that it is not advisable to adopt as a type the Brown segmental-tube wire-wound gun, nor to purchase or construct guns of this description for the service of the United States."

Tests have been completed of an experimental redoubt constructed at Fort Riley by firing at it numbers of the several types of projectiles employed by the mobile artillery.

During the year, the Board again took up the subject of aerial navigation, and made suitable allotments for the development of apparatus for this purpose. The Board has, for a number of years, believed in the possibility and utility of such devices, as witnessed by the allotments made in 1898 and 1899 to assist the late Dr. S. P. Langley, but, in view of the adverse sentiment expressed in Congress indicating that efforts would not be supported, has, since the arrest of the experiments then undertaken, refrained from entering this field. The time has now, however, been deemed opportune for further work in this direction.

As usual, the Board has been the repository of plans of a great number of military inventions, ranging from positive absurdity to real merit. The policy of the Board has remained unchanged, how-

ever, and all plans have been given careful consideration; what was good has been sifted from the worthless, with a view to utilizing everything valuable.

### ARMOR-PLATE TESTS.

January 4, 1906, the Board made an allotment of $54,019.40 to cover the cost of targets, armor plates, projectiles, powder, fuzes, and all other expenses, including labor, of making tests of armor plate in accordance with program submitted by the Chief of Ordnance at the request of the board. On May 2, 1907, the allotment was increased by $2,500 for continuing the experiments. The program has been added to as the work progressed, and there has been some delay incident to the development of an entirely satisfactory fuze, but substantial progress has been made.

### FOURTEEN-INCH WIRE-WOUND GUN.

Under date of March 7, 1907, the Chief of Ordnance presented to the Board the question of the practicability of wire winding for guns of 14 inches caliber, the caliber recommended by the National Coast Defense Board for the defense of certain positions. The Board recommended that one 14-inch gun be constructed on the wire-wound system, in accordance with plans submitted, and the work of construction is in progress.

### EXPERIMENTAL GUNS AND CARRIAGES.

*Brown 10-inch segmental-tube wire-wound gun.*—This gun was built under an allotment of $33,000 made by the Board September 15, 1896. Its test was begun in February, 1901, and in the two years following it was fired a total of 24 rounds, mishaps of various kinds necessitating its removal from the proving ground for repairs. The last round fired from the gun was on October 28, 1903, following which permission was granted to the Brown Wire Gun Company to remove the gun for alteration of the breech mechanism, which had operated in an unsatisfactory manner throughout the test. The gun was taken to the shops in Reading in January, 1905, that the desired changes might be made.

After long delay and many excuses for its non-return, the Board became convinced that nothing would be gained by a further test of the gun, and on November 7, 1907, recommended the revocation of all outstanding balances for the test of the material, which was then turned over to the Ordnance Department for disposal.

*Brown 6-inch segmental-tube wire-wound gun.*—As this subject has been finally disposed of during the year by the determination not to employ this method of gun construction, a brief history of the whole matter is given.

The act approved June 6, 1902, providing for fortifications and other works of defense, including the armament thereof, contained a provision that, in the discretion of the Secretary of War, a portion of the money appropriated could be used for the purchase of material for a limited number of steel-wire seacoast guns. The trustees

of the Brown wire-gun patents made application to the Secretary of War to be permitted to furnish guns of their design under this clause.

The Secretary of War, on July 21, 1902, referred to the Board for consideration and recommendation the question whether or not it was advisable to adopt as a type the Brown segmental-tube wire-wound gun, and to purchase or construct guns of that description for the service of the United States.

On August 7, 1902, the Board replied that "it is not at present prepared to recommend the Brown segmental-tube wire-wound gun as a type for the service." The Board did, however, recommend, and the Secretary of War approved, an allotment of $25,000 to procure one Brown 6-inch wire-wound gun, with suitable mount, implements and accessories, and 500 rounds of ammunition. This allotment was, on December 4, 1902, increased $16,000 upon the representation of the trustees as to the cost of manufacture, and the amount of ammunition to be furnished was reduced to 250 rounds.

On May 4, 1905, a further allotment of $3,960 was made to provide 30 additional rounds of ammunition—and a like number for the Crozier gun—for rapidity test. This sum not being used, the allotment was revoked on June 4, 1908. March 10, 1906, an allotment of $400 was made for repairing gas check seat of the gun and for rebanding ten projectiles for continuing the tests. The total amount allotted for purchase of the gun and mount and expenses of test was therefore $43,380, of which $1,980 was subsequently revoked.

In March, 1906, the gun was removed from the proving ground for repairs to the breech mechanism, and returned the latter part of July.

The tests were continued from that time until February of last year, the aggregate number of rounds fired being 98. The condition of the gun at this time was such that the Board determined to make no further firings in continuance of the test, and recommended the appointment of a committee of experts in gun construction with a view to aiding the Board in determining the relative merits of the Crozier and Brown systems of gun construction.

The Brown Wire Gun Company protested against a report being made on the relative merits of the two systems, on the ground that its gun was designed to permit comparison with guns in service at the time the allotment was made and that the Crozier gun was a later development; and, furthermore, that "the performance of both of these guns is so wonderful and so far ahead of anything else in the world as to make it no more than a matter of simple justice to adopt them both as types suitable for the service."

The Board, however, did not agree with this view, and at its meeting December 5, 1907, made the following recommendation, which was approved by the Secretary of War, viz:

> After full consideration of all arguments and claims of the Brown Wire Gun Company and of all tests of the guns so far constructed by the company and tested by the Government, the Board believes that it is not advisable to adopt as a type the Brown segmental-tube wire-wound gun, nor to purchase or construct guns of this description for the service of the United States.

In this connection it may be noted as a matter of information that General Crozier, the Chief of Ordnance, being the designer of the 6-inch gun tested in comparison with the Brown gun, was, at his own request, excused from the Board during consideration of all matters relating to the test of the 6-inch wire guns. The Board did, however,

avail itself of his knowledge as an expert witness in gun construction, as it did of the opinion of Mr. J. H. Brown and other representatives of the Brown Wire Gun Company.

*Crozier 6-inch wire-wound gun.*—In the preceding section reference is made to the determination of the relative merits of the Crozier and Brown 6-inch wire-wound guns. The history of the matter is as follows:

The Board at its meeting September 10, 1903, made an allotment of $11,000 for the construction of a wire-wound gun on the design of Gen. William Crozier, Chief of Ordnance. This gun differed in many respects from the Brown 6-inch gun, the most notable difference being the absence of the segmental tube, which is the characteristic feature of the Brown system, and the object of the allotment was to make a test of an additional system of construction.

On June 2, 1904, the Board made an allotment of $16,537 to procure 250 rounds of ammunition for the test of the gun and at the same time approved program for its test and that of the Brown 6-inch wire gun. September 19, 1904, $1,200 was allotted to enable the gun to be completed, and on January 4, 1906, a further allotment of $1,140 was made to procure a new breechblock and other necessary parts of the breech mechanism which had been damaged by a fire at the proving ground. The aggregate amount allotted for this gun and its test, exclusive of mount, was $31,857, which includes one-half of the $3,960 allotted May 4, 1905, for 60 rounds of ammunition for rapidity test of this and the Brown 6-inch wire gun, later revoked.

Test of this gun was carried on under the same program as the Brown gun and, so far as possible, simultaneously. It was fired a total of 98 rounds, and the firing record submitted to the same committee of experts for examination and comparison with the results obtained by the Brown design.

The conclusion of the expert committee was as follows:

A careful study of all the incidents of the test, as found in the report of the Ordnance Board, is conclusive that the Crozier gun has the greater merit.

### EXPERIMENTAL REDOUBT.

On June 6, 1907, an allotment of $5,000 was made for the purchase of ammunition to be used in the test of an experimental infantry redoubt by firing from the guns of the mobile artillery at that time in use in the Army. The redoubt had been erected at Fort Riley, Kans., during the course of the maneuvers of 1906. It was designed for the period of near defense only by a battalion of infantry against bombardment by a regiment of field artillery and assault by a brigade of infantry or dismounted cavalry.

The approved program contemplated, in the first place, the determination of the technical questions of the power and destructiveness of the projectiles, the redoubt being regarded simply as a target, and, in the second place, the solution of a tactical problem—the attack and defense of a field earthwork such as our troops will be required to construct for their own protection and with which they will meet in modern war.

The tests were novel and interesting as well as of value. They were witnessed by the troops stationed at the post and maneuver camp and also by officers of the national guard and student officers from the

service schools at Fort Riley and Fort Leavenworth, and afforded a practical demonstration which could not otherwise have been obtained. The report of the board which prepared the program and later executed its provisions was comprehensive and fully illustrated with diagrams and photographs. Following the recommendation of that board, provision will undoubtedly be made for further tests, especially with the new 4.7-inch gun and 6-inch howitzer now in course of manufacture for the service, by firing against a fieldwork of similar character but of much greater resisting power, as it was quite satisfactorily demonstrated that, while a work of the character of the redoubt at Fort Riley will successfully withstand the fire of the 3-inch field guns, using both common and high explosive shell, a deliberate fieldwork intended to resist the heavier guns would have to be considerably stronger.

## AERIAL NAVIGATION.

For a number of years the Board has been interested in the subject of aerial navigation, and as long ago as 1898 made allotments to carry on experiments with a machine of the heavier-than-air type, under the direction of the late Dr. S. P. Langley, Secretary of the Smithsonian Institution, who had made exhaustive experiments in aerodynamics[a] and who had demonstrated the practicability of mechanical flight by the successful operation of engine-driven models.

The many problems and mechanical difficulties met with in the development of the full-size machine have been set forth in the various published statements[b] of Doctor Langley, and the unsuccessful outcome of the experiments is too well known to require reiteration. It may be said, however, that at the time of the trials the Board was of the opinion that the failure of the aerodrome to successfully operate was in no manner due to the machine itself, but solely to accidents in the launching apparatus, which caused the wreck of the aerodrome before it was in free flight.

Doctor Langley considered it desirable to continue the experiments, but the Board deemed it advisable, largely in view of the adverse opinions expressed in Congress and elsewhere, to suspend operations in this direction.

The recent progress abroad in aeronautics induced the Board, on November 7, 1907, upon the recommendation of the Chief Signal Officer, to allot the sum of $25,000 for the purchase and test of dirigible balloons. Under this allotment a dirigible balloon was purchased from Thomas S. Baldwin. During the acceptance test this balloon remained in the air more than two hours and maintained an average speed of 19.61 miles per hour, carrying two operators and being under constant control. It is now undergoing further tests by officers of the Signal Corps.

On February 6, 1908, the Board made two allotments for the purchase of aeroplane flying machines—one of $1,000 on the bid of J. F. Scott and the other of $20,000 as proposed by A. M. Herring. The first-named bidder has not so far complied with the terms of his contract, and it is not anticipated that he will submit a machine.

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[a] See Experiments in Aerodynamics, Government Printing Office, 1891.

[b] Researches and Experiments in Aerial Navigation, Government Printing Office, 1908.

Mr. Herring has been granted an extension of time for delivery, but his machine should be submitted next spring.

The Board at this meeting also considered proposal from Messrs. Wilbur and Orville Wright, with whom it had been in correspondence for some time. Their bid was to furnish a machine in accordance with the specifications for the sum of $25,000. The available balance of the Board's funds at that time was insufficient to enable it to accept all three bids, so allotments were made for the two lowest only, but funds were obtained from another appropriation for the purchase of the Wright Brothers' machine. The Board has since made provision from its own funds for purchase of the Wright Brothers' aeroplane.

### AUTOMATIC AND SEMIAUTOMATIC GUNS AND MOUNTS.

*De Knight automatic machine gun.*—On August 7, 1902, the De Knight Gun Company exhibited to the Board its automatic machine gun, caliber .30. The material was sent to Springfield Armory for test, and on several occasions withdrawn for the correction of structural and other defects developed during the tests.

Continued tests having developed promising possibilities, the Board on April 6, 1905, made an allotment of $2,000 for the purchase of the gun and mount. On October 4, 1906, $250 was allotted for repairs and continuing test, and on April 4, 1907, the further sum of $200 was allowed for the same purpose.

At one time it was contemplated redesigning the gun to take advantage of the good points and avoid its defects, but meanwhile another machine gun had been presented from an independent source, embodying all the advantages hoped to be gained by redesigning the De Knight gun, and on June 4, 1908, the Board decided that the development of the De Knight gun did not warrant further expenditures by the Government.

*Vickers-Maxim 1-pounder automatic gun.*—April 4, 1900, the Board made an allotment of $8,300 for the purchase of a Vickers-Maxim 1-pounder automatic gun and carriage and 2,000 rounds of ammunition. The material was tested some time ago, but no action was taken pending completion of tests of the McClean 1-pounder gun, which have since been discontinued. It has been decided not to recommend the adoption of a 1-pounder gun for use in the service.

*Hotchkiss 1-pounder automatic gun.*—On June 8, 1900, the Board made an allotment of $4,052.50 to purchase from the American Ordnance Company a Hotchkiss 1-pounder automatic gun and carriage, and on October 4, 1900, an additional allotment of $1,300 was made to procure the necessary ammunition for test of the gun. The test was completed, but, as in the case of the Vickers-Maxim gun, no action was taken pending completion of the test of the McClean gun. It has now been decided not to recommend the adoption of a 1-pounder gun for the service.

*McClean 1-pounder automatic gun.*—In 1899 the Board undertook the test of a 1-pounder automatic gun presented by S. N. McClean, of Cleveland, and made allotments for the purpose in varying amounts up to the latter part of 1904. The total of such allotments was $5,084.28. This sum included $200 for the test of a musket-caliber automatic gun.

After many vexatious delays in the presentation of the material for test and frequent visits to the proving ground witnessing unsatisfactory tests, the Board finally, on June 4, 1908, revoked all outstanding balances, amounting to $1,758.40, and discontinued test of the material.

The company controlling the McClean patents has been reorganized, and, it is understood, is engaged in a further development of its ordnance.

*Seven and one-half pounder semiautomatic gun.*—On February 2, 1905, the board made an allotment of $6,000 for the construction of one 7½-pounder semiautomatic gun with long-recoil, broad-tired field carriage and limber, to determine its suitability for use as a mobile coast-defense gun. Program for test of the material was approved on April 17, 1906, and on June 18, 1906, the gun, carriage, and limber were shipped to the proving ground, where they are now undergoing test.

The gun had been fired 433 rounds at the date of the last report received.

*Fifteen-pounder semiautomatic gun and mount.*—March 3, 1904, the Board made an allotment of $10,000 for the construction of a 15-pounder semiautomatic gun and mount, to be made in accordance with designs submitted by the Chief of Ordnance. The allotment also covers the cost of 100 rounds of ammunition. An additional $2,000 was allotted on September 19, 1904, for completion of the gun and mount.

Program for test of the material was approved February 2, 1905, and test was commenced in the spring of that year, resulting in a recommendation from the Chief of Ordnance that the program be modified in certain particulars. On October 24, 1905, the Board approved of the modification and extension of the program and made an allotment of $3,366 for alteration of the gun and to carry out the provisions of the modified program and to provide 200 additional rounds of ammunition.

The test is in progress.

### MEANS FOR PREVENTING EROSION OF GUNS.

During the test of the Brown and Crozier 6-inch wire-wound guns it became evident that with the powder charges employed and the velocities obtained, the accuracy of the guns was soon destroyed, due to excessive erosion of the bore. There are several theories as to the cause of this erosion, and Mr. J. H. Brown expressed the belief that a method of banding projectiles proposed by himself would largely overcome this erosion and correspondingly extend the accuracy-life of the guns. Mr. Brown proposed to reline his 6-inch wire gun and conduct tests to determine whether or not his method would accomplish its purpose.

On account of the expense involved in altering this gun and the belief that tests could be as well made with a smaller caliber gun, the Board, on January 2, 1908, made an allotment of $2,500 to cover the cost of altering a 6-pounder gun, procuring the ammunition, and conducting a test of the method proposed by Mr. Brown. On April 2, 1908, a further allotment of $475 was made for the same purpose.

In order to furnish a means of comparison, the Board at its January meeting made an allotment of $5,000, on the recommendation of the Chief of Artillery, for conducting a similar test with two other 6-pounder guns, making use of two other forms of projectile bands. The work of preparing the guns and projectiles for the test is in progress.

### THE EMERY DISAPPEARING CARRIAGE.

The construction of the Emery 12-inch elevating carriage was authorized by special act of Congress appropriating $130,000 for the purpose in February, 1893, and a contract was entered into in March of that year with Mr. A. H. Emery, though the actual work of construction was not commenced until 1896, when, by act of June 6, an additional appropriation of $10,000 was made for a loading apparatus for the carriage and the inventor was relieved of the obligation of giving bond for the return of any money paid him should the carriage not prove to be successful. By act of May 25, 1900, the sum of $40,000 was added to the contract price of the carriage, and by act of March 3, 1903, the further sum of $40,000 was appropriated to enable Mr. Emery "to complete and erect the 12-inch carriage." The total amount appropriated for this carriage and appurtenances up to this time was therefore $220,000, of which $135,656.98 was paid.

The fortifications appropriation act of April 21, 1904, contained a provision authorizing the Secretary of War, in his discretion, to close the contract under which Mr. Emery was making the 12-inch carriage and to contract with him for either an 8 or 10-inch carriage to be furnished in place thereof, together with its foundations, erection, and preliminary tests ready for proof-tests by the Board, and to pay for this new carriage authorized the expenditure of the $84,343.02 remaining from prior appropriations, payment to be made "in such sums and at such times" as the Secretary of War "shall, in his discretion, think best."

In accordance with the provisions of the act referred to, all work on the 12-inch carriage was suspended, and on June 13, 1904, a contract was entered into by the Chief of Ordnance with Mr. Emery for one 10-inch carriage of his design.

The sundry civil appropriation act approved May 27, 1908, contained the following provision:

> To enable A. H. Emery to complete the gun carriage he is making for the Government, the Secretary of War is hereby authorized and directed to increase the price of said contract to be paid to the said Emery for the said carriage by the sum of thirty thousand dollars, which sum is hereby appropriated, twenty thousand of which is to be paid him on the approval of this act, five thousand when he is ready to put in the foundation for this carriage, and the other five thousand when he is ready to erect the carriage for its preliminary test.

The Board was not consulted regarding, nor has it any knowledge of the purpose of this additional appropriation other than as shown by the act. Payments under the contract are made by the Chief of Ordnance, and the Board is not informed of the progress of the work, which is entirely under the control and within the discretion of Mr. Emery, though the tests are to be made under the direction of this Board when the material is finally delivered.

RANGE FINDERS.

A competitive test of depression or vertical base range and position finders was held at Fort Wadsworth during October and November, 1907. Invitations to submit instruments were sent to all probable competitors, and the following position finders were entered in the test: The Warner & Swasey, the Whistler-Hearn, the Lewis, and the Bausch-Lomb-Saegmuller.

The test was conducted by the Artillery Board and was the most complete one of range finders that has ever been made in this country, more than 17,000 separate observations, at both fixed and moving targets, being made, recorded, and checked with simultaneous observations from horizontal base stations. The test included every essential feature necessary to determine the best coast range finder under the normal service conditions of use by officers and enlisted men of the Coast Artillery. The observations covered ranges from a minimum of 2,000 yards to a maximum of 12,000 yards.

The following table shows the number of errors (each based on groups of ten consecutive observations) which fell within certain zones bounded by lines from zero to 2 per cent of the range.

| Zone. | Lewis. | B. L. & S. | W.-H. | W. & S. |
|---|---|---|---|---|
| Between 0 and 1/4 per cent | 11 | 11 | 9 | 6 |
| Between 0 and 1/2 per cent | 40 | 41 | 37 | 33 |
| Between 0 and 3/4 per cent | 60 | 58 | 54 | 53 |
| Between 0 and 1 per cent | 75 | 71 | 65 | 66 |
| Between 0 and 5/4 per cent | 85 | 79 | 76 | 77 |
| Between 0 and 6/4 per cent | 90 | 87 | 82 | 84 |
| Between 0 and 7/4 per cent | 93 | 91 | 87 | 89 |
| Between 0 and 2 per cent | 96 | 94 | 92 | 94 |
| Between 0 and limit | 100 | 100 | 100 | 100 |

At fixed points the average error of the several instruments for all ranges was as follows:

| | |
|---|---|
| Lewis | 24.4 yards |
| Bausch, Lomb, Saegmuller | 35.1 yards |
| Whistler-Hearn | 38.9 yards |
| Warner & Swasey | 55.8 yards |

One of the competitors, Messrs. Warner & Swasey, protested to the Board against the report of the Artillery Board on the ground that one paragraph of the specifications had not been carried out by the latter board. After a full hearing of the case, at which a representative of the protesting firm, and also of the successful competitor, as recommended by the Artillery Board, were present, the Board reported on the test to the Secretary of War, and the latter directed that a further test be made carrying out the provisions of the paragraph of the specifications in question, "in order to deprive any competitor of any basis for any kind of complaint."

The supplemental test was completed November 11 and the Lewis instrument selected, so that the purchase of required instruments will not be longer delayed.

*Competitive test of horizontal-base range finders.*—June 4, 1908, the Board provided for a competitive test of self-contained horizontal-base range finders, which was held at Fort Monroe, Va.

As a result of this test the Board concurred in the recommendation of the Chief of Coast Artillery that twenty 9-foot self-contained hori-

zontal-base range finders be procured from Messrs. Barr & Stroud and issued to the service for use as an emergency range finder and for use in observing stations on low sites. Before these instruments are purchased one instrument is to be modified as prescribed by the Artillery Board and sent to Fort Monroe in order to determine whether or not the modifications are satisfactory.

*Warner & Swasey range finders.*—March 3, 1904, the Board made an allotment of $5,000 for the construction of a horizontal-base range finder of a design submitted by the Warner & Swasey Company. The instrument has a self-contained base line 25 feet long. Tests made with a quarter-size model demonstrated its probable efficiency, but the allotment was made with the condition that no payment would be made for the instrument unless the results of its test are satisfactory to the Board.

On October 4, 1906, an allotment of $800 was made to erect a temporary building at Fort Monroe for test of the instrument, which was then tested by the Artillery Board. The result was not entirely satisfactory, and the Chief of Artillery has directed that it be further tested.

ARTILLERY DEVICES.

*Rowan reflecting sight.*—August 11, 1904, an allotment of $250 was made for the construction and test of a reflecting sight, in accordance with design proposed by Maj. Hamilton Rowan, Coast Artillery Corps. Further allotments of $233 were later made to cover increased cost of the device, which was then installed on a disappearing carriage at Fort Monroe and tested by the Artillery Board, which found that, in its present form, the sight is not suitable for service, but suggested that improvements therein might make it useful.

*Searchlight reflector.*—June 24, 1904, an allotment of $800 was made for the purchase and test of an experimental truck and searchlight reflector upon recommendation of the Board of Engineers, which conducted the test. It was found that the use of the reflector entailed a reduction of 44 per cent in the illuminated area. Since this construction was authorized the development of metallic projectors has rendered its use unnecessary.

*Morris tube outfits.*—March 2, 1905, an allotment of $250 was made for the purchase of two Morris tube outfits and their adaptation to coast-defense guns for test in connection with the development of a system of training gunners. Additional allotments were made aggregating $380 for completing and installing the devices. The Artillery Board, which conducted the test, recommended that the device be not adopted as part of the drill equipment, as in the coast-artillery service actual targets are always available and the conditions do not need to be simulated. This recommendation has been approved.

*Portable searchlight for field artillery.*—October 4, 1906, the Board made an allotment of $6,500 for the development of a portable searchlight for use with the field artillery. On October 3, 1907, the allotment was further increased $4,500 for the same purpose and to cover the expenses of test, including such alterations as the test might show to be desirable.

The development of this outfit has met with many difficulties, owing to the special character of the apparatus, the lack of prece-

dents, and the disinclination of manufacturers to undertake the construction of untried apparatus at a fixed price, it being difficult to estimate costs in such cases. However, the generating set has been purchased and tested satisfactorily. Design for its mount on a suitable carriage is well under way, and satisfactory arrangements for its construction will soon be concluded. The mirror for the searchlight has been purchased and delivered. Designs for its mount on a suitable frame, methods of control, carriage for transporting, etc., are nearing completion, and contracts will soon be placed therefor.

MISCELLANEOUS.

*Subtarget gun machines.*—April 18, 1903, the Board made an allotment of $1,000 for the purchase of four subtarget gun machines, a device designed to aid in instruction in aiming small arms, and intended to replace the tripod and sand bag. May 5, 1904, $1,000 was allotted for the purchase of four more machines of improved pattern, and the eight machines were tested at as many different posts. On March 7, 1907, a further allotment of $500 was made to procure two machines for experimental test at the School of Musketry at the Presidio of Monterey, California.

Early in December, 1906, four of the gun machines were sent to Fort Riley for test by the Cavalry Board and four to Fort Leavenworth for similar test by the Infantry Board. The instructions contemplated that two squads of the same number each of inexperienced men be instructed, one squad on the subtarget machine and the other by the usual methods. Both squads were then to take up the regular course of firing on the range and the records made compared with one another. Through a change in the personnel of the Cavalry Board the test prescribed was not carried out by that board, and in November, 1907, the subject was again referred to it to make the test; a copy of the instructions was also sent to the School of Musketry to make a similar comparative test.

From the evidence before it at that time, however, this Board believed that the subtarget gun machine possessed points of utility as an aid in the preliminary training of riflemen, and, for the purpose of making an exhaustive test, on November 7, 1907, an allotment of $11,250 was made to procure subtarget gun machines for each regiment of cavalry and infantry. Department commanders were then called upon to have their inspectors of small-arms practice submit at the end of the then next target practice season a table showing the comparative scores made by organizations, with the percentage of improvement or loss shown by each organization by which the machine was used during the period covered by the table. These reports have not yet been received.

*Hollifield recording target practive rifle rod.*—December 5, 1907, an allotment of $300 was made for the purchase of 50 Hollifield recording target practice rifle rods, complete with target holders. This device is designed to accomplish a purpose similar to that of the subtarget gun machine, but in a simpler way. They were sent to the same organizations and boards as the subtarget gun machines procured under allotment of November 7, 1907, for test and comparison with the subtarget gun machine. Reports have not been received.

*Powell gun-sling catch.*—March 2, 1905, the Board made an allotment of $150 for the manufacture of 150 gun slings with an improved catch or hook, designed by Lieut. Leighton Powell, Thirteenth Infantry. The slings were manufactured at Rock Island Arsenal, and on September 21, 1905, a further allotment of $117 was made to cover their cost. They were distributed for test by troops in service. The reports varied greatly as to the merits of the device, but in the opinion of the Board did not show it to possess sufficient advantages over the service hook to warrant a change.

*Sunshades for azimuth instruments.*—On April 6, 1905, the Board made an allotment of $150 for the construction of two or more experimental sunshades for azimuth instruments to test their utility.

As a result of the joint exercises, it was determined beyond question that the crow's nest with a sunshade over it was not in any way suited to the purpose of a station for a battery commander, and on recommendation of the Chief of Artillery further tests were abandoned.

*Tests to determine drift of mortar projectiles.*—On April 6, 1905, an allotment of $750 was made, on the recommendation of the Chief of Artillery, for the purchase of the necessary ammunition for test to be conducted at Fort Terry, N. Y., to determine the drift and probable error of mortar projectiles when fired at high angles of elevation.

The purpose of this test was to determine whether or not the left drift, which had been noted for mortar projectiles fired at an elevation of 70° could be accounted for by prevailing winds at high altitudes. The theory had been advanced that if mortar projectiles were fired at 70° elevation the projectiles would be carried to such a high altitude that they would be affected by strong, prevailing winds. All shots that had been fired at 70° elevation up to this time had been fired in a southerly direction. It was proposed to fire at Fort Terry a certain number of shots due south, and immediately thereafter to fire a certain number due north. If the shots were affected by the winds in the manner indicated, then it was expected that those shots that were fired south would drift to the left, and those that were fired north would drift to the right. Considerable delay in conducting the test was caused by necessary changes in the mortar carriages and by inclement weather. It was finally conducted in October, 1907. The results of the test, so far as they went, indicated that the theory with respect to the prevailing winds was not correct. A further theoretical study of the subject also indicated that this could not satisfactorily account for the left drift. Moreover, it was determined that mortars should not be fired at elevations greater than 65°, and the question of left drift was therefore eliminated from consideration, and no further action was deemed necessary.

*Transmission of visible signals.*—December 7, 1905, on recommendation of the Chief Signal Officer, the Board allotted $2,400 for experimental work connected with the transmission of visible signals by electricity or otherwise. The work is in progress, though interrupted for a time by the death of the designer of the most promising apparatus.

*Insulating compounds.*—January 4, 1906, the Board made an allotment of $1,300 to enable the Chief Signal Officer to make experiments with insulating compounds for cables, with the view of determining

whether or not the percentage of Para rubber heretofore considered necessary could be reduced. Valuable information relative to submarine and subterranean cables was obtained.

*Vega telephot camera.*—An allotment of $600 was made on June 6, 1907, for the purchase of a Vega telephot camera, manufactured by a Swiss optical firm and brought to the attention of the Board through the State Department. The tests demonstrated the value of this instrument, and it has been turned over to the Signal Corps for practical use.

*Le Blanc searchlight controller.*—March 7, 1907, an allotment of $500 was made for the equipment of a 60-inch searchlight with an electrical controller designed by Mr. A. Le Blanc.

The device was installed at Fort Schuyler, where it was tested by a committee of the Board last June, with favorable results. Arrangements have been made by the Chief of Engineers to equip another 60-inch light with an improved form of the Le Blanc controller, which will be tested at Fort Monroe in conjunction with other devices of the same character.

*Wireless telephone apparatus.*—November 7, 1907, the Board made an allotment of $3,000 for the purchase and test of experimental wireless telephone apparatus, on the recommendation of the Chief Signal Officer. The apparatus was procured from the Radio Telephone Company and installed at Fort Monroe. Satisfactory conversation was held at a distance of 5 miles by means of the instruments, and they were accepted and paid for.

*Material target for coast artillery.*—On the recommendation of the Chief of Coast Artillery the Board, on January 2, 1908, made an allotment of $500 for the development of a material target for use of the coast artillery. An additional $500 was allotted on June 4, 1908, for the same purpose. Work under these allotments is in progress.

*Photographic method of determining "overs" and "shorts."*—On January 2, 1908, the Board made an allotment of $15 to enable the Artillery Board to procure material for developing a photographic method of determining "overs" and "shorts" in artillery target practice. The Chief of Coast Artillery reports the satisfactory completion of the tests, and that the type of camera considered most suitable for the purpose has been determined upon. It is contemplated that two cameras of the adopted type will be issued to each coast artillery district.

## ESTIMATES FOR THE COMING YEAR.

The estimate submitted for the current fiscal year was $100,000, but only half of this amount was appropriated. The estimate submitted for the ensuing year is $100,000, and it is highly desirable that the full amount of the estimate be appropriated. In past years when, in its opinion, the funds on hand were sufficient for the work in progress or contemplated, the Board reduced its estimate, and this would be its continuing policy. The Board was seriously handicapped during the past year by lack of funds, and was compelled to leave undone work of an important experimental character solely for lack of money. Were it not for the fact that the appropriation is a continuing one, it would have been absolutely impossible for the Board to carry on the work with which it is charged by Congress. For the

past four years the allotments have exceeded the appropriations from $12,000 to $75,000, thus exhausting all reserves.

If, in the terms of the appropriation act, it is the desire of Congress that the Board shall continue in the "proper discharge of the duty devolved upon it by the act approved September twenty-second, eighteen hundred and eighty-eight," the necessary funds must be provided. The estimate submitted represents the judgment of the Board as to its requirements.

## FINANCIAL STATEMENT.

In compliance with the act of February 24, 1891, which requires "a detailed statement of all contracts, allotments, and expenditures made by the Board," an exhibit, marked Appendix A, accompanies this report, giving a detailed statement of allotments and expenditures from July 1, 1907, to June 30, 1908, the period covered by this report. No contracts have been made by the Board during the fiscal year.

On July 1, 1907, the Board had on hand $93,063.30, and by act of May 27, 1908, $50,000 was appropriated. To be added to this is the sum of $29,734.11, revoked from prior allotments, making the total available for the year $172,797.41.

During the year covered by this report the Board made allotments amounting to $85,361.66, leaving a balance June 30, 1908, of $87,435.75, for continuing the work of the Board, of which amount $13,441.61 is available for special purposes only, as shown by Appendix A, leaving $73,994.14 only available for general experimental purposes.

J. F. BELL,
*Major-General, Chief of Staff, President of the Board.*
WILLIAM CROZIER,
*Brigadier-General, Chief of Ordnance.*
ARTHUR MURRAY,
*Brigadier-General, Chief of Coast Artillery.*
W. L. MARSHALL,
*Brigadier-General, Chief of Engineers.*
M. M. MACOMB,
*Colonel, General Staff.*
E. M. WEAVER,
*Lieutenant-Colonel, Coast Artillery Corps.*
THOS. J. HENDERSON,
*Civilian Member.*
S. A. CHENEY,
*Captain, General Staff, Recorder.*

The SECRETARY OF WAR.

# APPENDIX A.

TABLE SHOWING ALLOTMENTS AND EXPENDITURES MADE BY THE BOARD OF ORDNANCE AND FORTIFICATION FROM JULY 1, 1907, TO JUNE 30, 1908, INCLUDING STATEMENT OF UNEXPENDED BALANCES.

*Act of March 2, 1899.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907 [a] | | $10,000.00 |

*Act of August 18, 1890.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907 [b] | $4,110.00 | |
| 1908. | | |
| June 4. Revocation from allotment of June 6, 1907, for Vega telephot camera | 6.61 | |
| | 4,116.61 | |
| Allotments under this act: | | |
| 1908. | | |
| Jan. 2. For photometric experiments with searchlights $550.00 | | |
| Feb. 6. Additional for same purpose 125.00 | | |
| | 675.00 | |
| Balance on hand June 30, 1908 | | 3,441.61 |

*Acts of 1892 to 1907, inclusive.*

| | | |
|---|---|---|
| Balance on hand July 1, 1907 | $78,953.30 | |
| Act of May 27, 1908 | 50,000.00 | |
| | | $128,953.30 |
| Revocations of allotments under these acts: | | |
| 1907. | | |
| Nov. 7. October 5, 1900, for ammunition for test of Brown 10-inch wire-wound gun | 1,239.04 | |
| Dec. 5. May 5, 1904, for ammunition for test of 6-pounder semiautomatic guns and mounts | 9,083.36 | |
| April 11, 1905, ammunition for tests to deter- | | |
| 1908. | | |
| Feb. 4. January 2, 1908, for photometric experiments with searchlights | 125.00 | |
| May 2, 1907, for one Nikoloff telemeter | 25.00 | |
| Apr. 2. January 4, 1906, for experiments with insulating compounds | 158.00 | |
| June 4. January 30, 1900, McClean recoil check for 3.2-inch rifle | 497.30 | |
| May 4, 1900, ammunition for test of McClean 1-pounder gun | 1,558.40 | |
| June 2, 1904, ammunition for test of Crozier 6-inch wire-wound gun | 10,549.39 | |
| November 10, 1904, ammunition and expenses of test of McClean 1-pounder gun | 67.08 | |

[a] Available for movable submarine torpedoes only.
[b] Available for purchases abroad only.

| | | | |
|---|---|---|---|
| 1908. | | | |
| June 4. | April 11, 1905, ammunition for tests to determine drift of projectiles in mortar fire | $81.60 | |
| | May 4, 1905, for 60 rounds of ammunition for test of Brown and Crozier 6-inch wire-wound guns | 3,960.00 | |
| | March 1, 1906, ammunition for stability tests of mine commander's station | 684.98 | |
| | November 1, 1906, test of McClean musket caliber automatic gun | 200.00 | |
| | November 1, 1906, ammunition for test of Semple smoke compound | 28.00 | |
| | January 3, 1907, one .22 caliber rifle and ammunition for test of device for training artillery gunners | 17.33 | |
| | April 4, 1907, cost of repairs and continuing test of De Knight gun | 50.00 | |
| | February 6, 1908, inspection of subtarget gun machines | 3.02 | |
| | December 7, 1905, for experiments in transmission of visible signals | 1,400.00 | |
| | | | $29,727.50 |
| | | | 158,680.80 |

Allotments during the year:

| | | | |
|---|---|---|---|
| 1907. | | | |
| Oct. 3. | Portable searchlight for field artillery, including test and alteration | 4,500.00 | |
| Nov. 7. | To procure subtarget gun machines for each regiment of cavalry and infantry | 11,250.00 | |
| | For procuring and testing dirigible balloons | 25,000.00 | |
| | For purchase and test of wireless telephone apparatus | 3,000.00 | |
| Dec. 5. | Purchase of one Bausch, Lomb, Saegmuller Company range finder | 1,200.00 | |
| | Purchase of 50 Hollifield recording target practice rifle rods | 300.00 | |
| 1908. | | | |
| Jan. 2. | To cover cost of altering 6-pounder gun, procuring ammunition, and conducting test of Brown method of preventing erosion | 2,500.00 | |
| | For conducting similar test with two other 6-pounder guns, including ammunition and all expenses | 5,000.00 | |
| | For expenses of test of vertical base range finders at Fort Wadsworth | 30.00 | |
| | For developing photographic method of determining "overs" and "shorts" | 15.00 | |
| | For developing a material target for coast artillery | 500.00 | |
| | For purchase of material and conducting photometric tests of searchlight mirrors | 400.00 | |
| Feb. 6. | Aeroplane flying machine of design of J. F. Scott | 1,000.00 | |
| | Aeroplane flying machine of design of A. M. Herring | 20,000.00 | |
| | Inspection of subtarget gun machines | 15.00 | |
| Mar. 26. | Stationery and miscellaneous supplies | 20.83 | |
| Apr. 2. | Additional for test of Brown method of preventing erosion | 475.00 | |
| June 4. | Additional for development of material target | 500.00 | |
| 30. | Expenses of board for year | 8,980.83 | |
| | | | 84,686.66 |
| | Balance available July 1, 1908 | | 73,994.14 |

RECAPITULATION.

| | | |
|---|---|---|
| Balance on hand, act of March 2, 1889 | $10,000.00 | |
| Balance on hand, act of August 18, 1890 | 4,110.00 | |
| Balance on hand and appropriated during the year, general fund | 128,953.30 | |
| Allotments revoked | 29,734.11 | |
| Total available | | $172,797.41 |
| Allotments during the year | | 85,361.66 |
| Available for allotment | | 87,435.75 |

# APPENDIX B.

*Summary of subjects considered.*

| Subject. | Submitted by— |
|---|---|
| Additional allotment for test of portable searchlight | Chief of Engineers. |
| Program for test of McClean 1-pounder gun | Chief of Ordnance. |
| Program for tests of armor plate | Board of Ordnance and Fortification. |
| Gun platform | George Humphreys. |
| Air ship | H. B. Schiller. |
| Gas check for projectiles | H. E. Willsie. |
| Projectile | August Orshansky. |
| Gun muzzle | Elias West. |
| Spherical fort | Do. |
| Sight for small arms | Sutherland Rifle Sight Co. |
| Self-registering target | E. E. Taliaferro. |
| Entrenching spade | Albert Staehle. |
| Projectile with anhydrous ammonia | William J. Ruff. |
| Electrical cannon | James B. Gottsberger. |
| Gun mounting and shield | C. E. Brandt. |
| Shell and fuse | A. C. Hopkins. |
| Bullet-proof fabric | Emil Vogel. |
| Recoil device for guns | Jean Paul Degner. |
| Centrifugal device for throwing high explosives, invented by a Russian officer. | Maj. W. W. Gibson, military attaché. |
| Self-oiling s-le | William J. Greening. |
| Electro-magnetic mine, a Swedish invention | Maj. W. W. Gibson, military attaché. |
| Projectile | Linford H. Upton. |
| Searchlight for gun | Samuel Barfiel. |
| Rifling for guns | L. H. Griggs. |
| Instructions for test of depression position finders | Chief of Artillery. |
| Range-finding telescope | Charles V. Linderman and E. C. Anderson. |
| Safety device for small arms | Robert M. Gardiner. |
| Aerial navigation | Capt. W. E. P. French. |
| Shoemaker wireless control torpedo | Secretary of Navy. |
| Projectile | J. Ivens Ferraz. |
| Airship | S. Yeager. |
| Portable observation tower | A. S. Olney. |
| Aeroplane flying machines | Wilbur and Orville Wright. |
| Further test of subtarget gun machines | Board of Ordnance and Fortification. |
| Experiments with dirigible balloons | Chief Signal Officer. |
| Wireless-telephone experiments | Do. |
| Revocation of allotment for test of Brown 10-inch wire-wound gun. | Chief of Ordnance. |
| Aerial navigation | Capt. W. E. P. French. |
| Self-registering target | Albert Fackler. |
| Searchlight beam as an electrical conductor | Charles R. Butler. |
| Electrically charged wire entanglements | Henry Kernan. |
| Searchlight | Samuel Barfiel. |
| Leon-Bjorkman range finder | C. G. Bjorkman. |
| Aerial navigation | Charles Fiesse. |
| Discontinuance of test of Rafferty range finder | Artillery Board. |
| Smoke-producing shell as shield | Will A. Wright. |
| Breastplate of aluminum and hand grenade | Thomas Sovy. |
| Magnetic submarine torpedo | A. R. Coleman. |
| Specifications for aeroplanes | Committee of board. |
| Device to prevent erosion of guns | J. H. Brown. |
| Report of test of depression position finders | Artillery Board. |
| Adoption of Lewis position finder as type for service | W. G. Wilson. |
| Allotment for test of range finder | Bausch, Lomb & Saegmuller Co. |
| Allotment for target practice rifle rod | H. B. Hollifield. |
| Revocation of allotment for test of 6-pounder guns and mounts. | Chief of Ordnance. |
| Wire-wound guns, adoption not recommended | Brown Wire Gun Company |
| Report on Vega telephot camera | Chief Signal Officer. |
| Producing hydrogen gas | Charles Fiesse. |

***Summary of subjects considered*—Continued.**

| Subject. | Submitted by— |
|---|---|
| Fortification | Elias West. |
| Sectional fort | Chester Allison. |
| Operating number of small arms | Guiseppe Wulz. |
| Request for adoption of subtarget gun machine | H. C. Wilson. |
| Sighting arms at night | C. G. Weiterhausen. |
| Aerial navigation | Wilbur Wright. |
| Allotment for test of means of preventing erosion | Chief of Artillery. |
| Allotment for developing photographic method of determining "overs" and "shorts." | Artillery Board. |
| Photometric tests of searchlights | Maj. E. T. Wilson. |
| Specifications for aeroplane flying machines | Chief Signal Officer. |
| Gun construction | Col. M. B. Adams, |
| Report of drift of mortar projectiles | Chief of Artillery. |
| Self-registering target | T. F. Oetjen. |
| Cartridge with combustible case | F. S. Rogers. |
| Shell-less cartridge | A. J. O'Brien, attorney for Ed. Dettelbach. |
| Operating submarine mines | J. E. Johnson. |
| Dirigible balloon | E. W. Creecy, attorney for J. M. Miller. |
| Allotments for aeroplane flying machines | J. F. Scott, A. M. Herring. |
| Revocation of allotment for Nikoloff telemeter | Chief of Ordnance. |
| Allotment for inspection of subtarget gun machines | Do. |
| Gun-sling catch | Lieut. Leighton Powell. |
| Experiments discontinued with sunshades for azimuth instruments. | Chief of Artillery. |
| Report of test of range finder presented by H. L. Rogers | Chief of Ordnance. |
| Report on Gottlieb experiments with searchlights | Maj. Edward Burr. |
| Means of conducting warfare | A. H. Watts. |
| Harbor defense | E. C. Howell. |
| Fuse | Hon. M. E. Driscoll for Joseph H. Walsh. |
| Smoothbore cannon | William F. Burr. |
| Projectile | George C. Williams. |
| Plan for protecting forts, a magnetic torpedo, and projectile charged with noxious gas. | James H. Park. |
| Safety arm racks | Sergt. H. Lissenburg. |
| Projectile for loading practice | Albert T. Otto for P. A. Guye. |
| Fort | Hon. Knute Nelson for B. C. Johnson. |
| Armored turret | E. L. Munson. |
| Competitive test of horizontal base range finders | Chief of Artillery. |
| Self-oiling axle | W. J. Greening. |
| Projectile | M. V. B. Grush. |
| Projectile for use against balloons | Anton Englerth. |
| Incendiary shell | F. Gardner. |
| Swivel-head cleaning rod | E. W. O. Kauffman. |
| Device for throwing heat | Benjamin I. Moore. |
| Gun rest | Joseph Jeranek. |
| Submarine telescope | John C. Watts. |
| Reflecting shield | H. Udelman. |
| Horizontal base range finder | P. Jubien. |
| Arc feed and control mechanism for searchlights | William O. Webber. |
| Harbor defense | Chas. W. McCandless, attorney for Salu Sandstrum. |
| Construction of fortifications | Thomas C. Harris. |
| Dirigible torpedo | James Seddon. |
| Operating submarine mines | Joe Cushing. |
| Submarine signal device | Henry L. Lambotte. |
| Attachment for dirigible torpedoes | George F. Cole. |
| Portable tower | A. S. Olney. |
| Revocation of allotment for insulating compounds | Chief Signal Officer. |
| Additional allotment for test of means of preventing erosion | J. H. Brown. |
| Compound projectile or shrapnel | M. V. B. Grush. |
| Turbine gasoline motor | Karl Mikkelsen. |
| Vehicle gear | C. E. Phillips. |
| Noiseless and smokeless gun | Abraham Zilbersher. |
| Engine of war | Manuel Negron. |
| Nitroglycerin shell | George W. Jackson. |
| Harbor defense | J. M. T. Lawrence. |
| Submarine mine | Robert E. Kilpatrick. |
| Protest against acceptance of report of test of depression position finders. | Warner & Swasey Co. |
| Infringement of Subtarget Gun Co. patents | Emery & Booth, attorneys. |
| Bomb-dropping device | Frederick Homolya. |
| Obturating band of rubber | John W. Millaway. |
| Observing device | W. H. Rea. |
| Multiple-barrel firearm | George W. Kennedy. |
| Alarm attachment for arm racks | Sergt. H. Lissenburg. |
| Perspective range finder | Do. |
| Impact fuse | Samuel Barfiel. |
| Compound to prevent deafness | The Embossing Co. |
| Dirigible torpedo | James Seddon. |
| Request for new test of depression position finders | Warner & Swasey Co. |

*Summary of subjects considered*—Continued.

| Subject. | Submitted by— |
|---|---|
| Adoption of type range finder | W. G. Wilson. |
| Additional allotment for material target | Chief of Artillery. |
| Revocation of unexpended balances of allotments | Chief of Ordnance. |
| Do | Chief Signal Officer. |
| Test of self-contained horizontal base range finders | Chief of Artillery. |
| Test of automatic gun | V. P. De Knight Gun Co. |
| Mounting balloon guns on railroad cars | Earl Spinney. |
| Incendiary shell | F. Gardner. |
| Projectiles | D. P. Dunkle. |
| Rotary excavator | T. Fenwick. |
| Combination vehicle | S. N. Polishook. |
| Tests of explosives | E. Charbonneaux. |
| Device to prevention drooping of muzzle of guns | Albion S. Howe. |
| Controlling and operating torpedoes | Charles N. Leonard. |
| Steam traction engine | M. Rumley Co. |

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